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Department of Energy
Ohio Field Office
Fernald Area Office
P. O. Box 538705
Cincinnati, Ohio 45253-8705
(513) 648-3155

MAY 29 1998

DOE-0821-98

Mr. David A. Kee, Director
c/o Mike Murphy
Air & Radiation Division
U.S. Environmental Protection Agency
Region 5 - A - 18J
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

Dear Mr. Kee:

1997 NATIONAL EMISSIONS STANDARDS FOR HAZARDOUS AIR POLLUTANTS ANNUAL REPORT FOR THE FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

Enclosed is the Calendar Year 1997 National Emissions Standards For Hazardous Air Pollutants (NESHAP) Annual Report for the Department of Energy, Fernald Environmental Management Project (DOE-FEMP) as required by 40 CFR 61.94(a). As committed in the Integrated Environmental Monitoring Plan, this report has been included as Appendix E in the Integrated Site Environmental Report. Enclosed with the report are the CAP88-PC files used to assess individual dose.

This report estimates an Effective Dose Equivalent (EDE) to the Maximally Exposed Individual (MEI), using 1997 site meteorological data, of 1.4 millirem (mrem), which is considerably lower than the NESHAP Subpart H standard of 10 mrem.

If you have any questions, please contact Ed Skintik at (513) 648-3151.

Sincerely,

for Jack R. Craig
Director

FEMP:Skintik

Enclosure: As stated

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Recycled and Recyclable

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cc w/encl:

AR Coordinator, FDF, 78

cc w/enc (summary only):

P. J. Sturdevant, HC-DOES
T. Tucker, OEPA-Columbus
T. Schneider, OFFO

cc w/o enc:

L. C. Goidell, FDF, 65-2

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NATIONAL EMISSIONS STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAP) ANNUAL REPORT

FERNALD ENVIRONMENTAL MANAGEMENT PROJEC
FERNALD, OHIO

MAY 1998

U.S. DEPARTMENT OF ENERGY
FERNALD AREA OFFICE

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1997 ENVIRONMENTAL SUMMARY

VOLUME II

(Appendix E)

APPENDIX E

NATIONAL EMISSIONS STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAP)

ANNUAL REPORT FOR THE FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

APPENDIX E

Appendix E contains the National Emissions Standards For Hazardous Air Pollutants (NESHAP) Annual Report for the Fernald Environmental Management Project (FEMP) as required by 40 CFR 61.94(a). This appendix consists of two attachments as follows:

- Attachment E.1 contains the National Emissions Standards For Hazardous Air Pollutants (NESHAP) Annual Report.
- Attachment E.2 contains the meteorological data file and the CAP88-PC files used to assess individual dose.

ATTACHMENT E.1

NATIONAL EMISSIONS STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAP) ANNUAL REPORT

U.S. Department of Energy
Radionuclide Air Emissions Annual Report
(under Subpart H of 40 CFR Part 61)
Calendar Year 1997

Site Name: Fernald Environmental Management Project (FEMP), Fernald, Ohio

Field Office Information:

Office: Fernald Area Office (FN), U. S. Department of Energy
Address: Post Office Box 538705
Mail Stop 45
Cincinnati, Ohio 45253-8705

Contact: Mr. Ed Skintik Phone: (513) 648-3151

Site Information

Operating Contractor: Fluor Daniel Fernald

Address: 7400 Willey Road
Fernald, Ohio 45030 (Site location)

Post Office Box 538704
Cincinnati, Ohio 45253-8704 (mailing address)

Contact: Kip Klee Phone: (513) 648-5289

SUMMARY

For CY-1997 twenty-one radionuclide emission sources were identified as being subject to the reporting requirements of 40 CFR 61, Subpart H. The overall dose to the maximally exposed individual (MEI) is estimated to be 1.4 mrem (1.4E-02 mSv) which is in compliance with the Subpart H standard of 10 mrem. Of this dose, 1.7E-03 mrem (1.7E-05 mSv) came from point sources and 1.4 mrem (1.4E-02 mSv) came from diffuse sources.

SECTION I: FACILITY INFORMATION

A. Site Description

The Fernald Environmental Management Project (FEMP) is located on a 425 hectare (1050 acre) area approximately 27 km (17 miles) northwest of Cincinnati, Ohio. The Production area covers approximately 136 acres (55 hectares) in the center of the FEMP. The facility is sited just north of the small farming community of Fernald, Ohio.

The area immediately surrounding the FEMP is primarily rural in nature, characterized by the predominance of agriculture, with some light industry and private residences. The FEMP is located on a relatively level plain, outside of the 500-year flood plain of the Great Miami River, in an ancestral river valley known as the New Haven Trough.

The climate is characterized as continental, with average temperatures ranging from approximately 29°F (-1.7°C) in January, to 76°F (24.4°C) in July. Average annual precipitation is approximately 40 inches (102 cm) per year. Prevailing wind flow is from the south-southwest.

For 37 years, the former Feed Materials Production Center (Fernald site) produced uranium metals for the United States Department of Energy (DOE) and its predecessors. On July 10, 1989, uranium metals production was suspended. Management responsibilities of the Fernald site were transferred from the Defense Programs organization to the DOE's Office of Environmental Restoration and Waste Management.

Currently, most activities at the FEMP are conducted under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). These activities include sample analysis, waste characterization, the management, treatment, storage, and disposal of hazardous, mixed, low-level and solid wastes, and the decontamination and cleanup of radioactively contaminated buildings, equipment, soils, and waters. The site also manages thorium wastes, and K-65 silo waste material which contains radium and produces radon gas.

B. Source Descriptions

The majority of the radioactive contamination at the FEMP is due to uranium, uranium compounds, and thorium. Additional contamination comes from the daughter products of uranium and thorium.

Calendar year 1997 (CY-1997) radionuclide emission sources at the FEMP include:

- Plant 1: Fugitive emissions generated from the implosion and cleanup activities of the Plant 1 building;
- Plant 6: Emissions from repackaging operations;
- Plant 8: Radionuclide releases via entrainment in mists generated during vacuum filtration operations;
- Building 11: Emissions from the laundry facilities resulting from the processing of contaminated clothing used at the FEMP, and from the Respirator Washing Facility located in the building;
- Building 15: Emissions from laboratory operations;
- Building 20: Emissions resulting from laboratory operations, and emissions from the Cooling Water Tower via mist loss (due to dissolved radionuclides in the cooling water);
- Building 51: Emissions from the Advanced Waste Water Treatment facility;
- Building 53: Emissions from laboratory operations;
- Building 65: Emissions from thorium repackaging operations;
- Building 71: Emissions from material sorting and repackaging operations;
- Building 78: Emissions from repackaging operations;
- Other sources: Fugitive emissions from the Waste Pit Remedial Action Project (WPRAP), Waste Pit 5, and various stockpiles around the FEMP site, generated via wind erosion, earth moving equipment and material handling operations;

SECTION II: AIR EMISSIONS DATA

Tables 1 and 2 list the monitoring status, control equipment information, and the distance and direction to the nearest receptor for the point and grouped point sources at the FEMP. Table 3 lists the annual quantities (in Curies) of Point Source radionuclides likely to contribute to more than 10% of the effective dose equivalent (EDE) from the specific source.

Table 4 identifies the FEMPs non-point sources and lists the annual quantities of radionuclides likely to contribute to more than 10% of the EDE from those sources.

Particulate samples were collected from monitored stacks via isokinetic samplers. Due to the high efficiency of the HEPA filters, the amount of particulate sample collected from each stack was small. Composite samples were generated from these filters for each stack and analyzed for those radionuclides likely to contribute to more than 10% of the EDE.

For unmonitored sources, engineering calculations were used to develop estimates of total uranium emissions. The total uranium emission estimates were used to calculate radionuclide-specific emission rates, using radionuclide-specific activity to mass total uranium values (Ci/kg U) developed from past source sampling activities at the FEMP.

SECTION III: DOSE ASSESSMENT

A. Description of Dose Model

1. Dose Model

The radionuclide dose calculations were performed using the CAP88-PC Version 1.0 computer code. This package contains the AIRDOS-EPA (Mo79) computer code, which implements a steady-state, Gaussian plume, atmospheric dispersion model to calculate environmental concentrations of released radionuclides, and U. S. Nuclear Regulatory Commission Regulatory Guide 1.109 food chain models to calculate human exposures, both internal and external, to radionuclides deposited in the environment. The human exposure values are then used by the DARTAB computer code to calculate radiation doses to man from radionuclides released during the year. The dose calculations use dose conversion factors found in the RADRISK data file provided with the CAP88-PC package.

2. Maximally Exposed Individual

Estimates of the EDE from each FEMP source were made at the locations of forty (40) off-site receptors surrounding the FEMP. The maximally exposed individual (MEI) was determined to be an individual at the receptor location with the highest collective EDE.

B. Summary of Input Parameters

Unless otherwise discussed, the input parameter values used were the default values provided with the CAP88-PC computer codes and databases by the EPA.

1. Source Data

Source information was gathered from site records, and is provided in the attached CAP88-PC Synopsis files. All point source emissions occur at or near ambient temperatures; plume rise is momentum dominated. Source to receptor distances were calculated using information from site maps using Ohio State Planar Coordinate System coordinates.

2. Meteorological Data

Meteorological data was obtained from the on-site FEMP meteorological station. The CY-1997 data recovery rate was 98.5%, considered acceptable for running the CAP88-PC code. Wind speed and direction data were compiled in a Statistical Array (STAR) format and converted using the GETWIND utility provided with the CAP88-PC package. The STAR formatted data is provided in Table 5. Additional site station data includes:

Annual Average Temperature: 51.1°F (10.61°C)
Annual Rainfall: 40.26 in. (102.3 cm)

An estimate for the average mixing height for the FEMP site was obtained from the book *Potential for Urban Air Pollution Throughout the Contiguous United States*, by George Holzworth. This estimate was:

Annual Average Mixing Height: 950 meters

3. Other Input Parameters

The CAP88-PC code provides dose estimates from radionuclides ingested. Beef, milk, and food crop production were assumed to be the maximum possible for the available ground area, an assumption that overstates these activities in the area. It was further assumed that 100% of the foodstuffs consumed by the local population were grown within the 80km/50mi radius, which also provides a conservative estimate for the impact. The default values used were:

Fraction of foodstuffs	Local Area	50-mile radius	Beyond 50 miles
Vegetables &	0.700	0.300	0.00
Meat:	0.442	0.558	0.00
Milk:	0.399	0.601	0.00

C. Compliance Assessment

The results of the CAP88-PC modeling are summarized in Table 6. For CY-1997, the dose from point sources to the MEI is estimated to have been 1.7E-03 mrem (1.7E-05 mSv). The total estimated dose received by the MEI for CY-1997 is 1.4 mrem (1.4E-02 mSv). This individual is located 1011 meters east-southeast of the center of the FEMP.

These results indicate that, during CY-1997, the FEMP was in compliance with the 10 mrem dose limitation of 40 CFR 61, Subpart H.

SECTION IV: ADDITIONAL INFORMATION

A. Construction/Modifications at the FEMP

No projects were completed in CY-1997 for which the requirements to apply to the EPA for approval to construct or modify were waived due to the provisions of 40 CFR 61.96.

B. Unplanned Releases of Radionuclides

For CY-1997, no unplanned releases of radionuclides were identified in a review of the 379 notifications received by the site's release evaluators.

C. Diffuse Sources - Dose assessment

In CY-1997 there were eight (8) diffuse emission sources at the FEMP. These sources are listed in Table 4. Engineering calculations were used to develop estimates of total uranium emissions. The total uranium emission estimates were used to calculate radionuclide-specific emission rates, using radionuclide-specific activity to mass total uranium values (Ci/kg U) developed from past source sampling activities at the FEMP. These emission rates were used to estimate EDEs to offsite receptors and are listed in Table 6. Descriptions of the diffuse sources are provided below.

(1) PLANT 1 - Emissions generated from the implosion and cleanup activities related to the Plant 1 building. Data from four ambient air monitoring stations were used to determine the average airborne radionuclide activity due to Plant 1 cleanup operations. This activity, along with the average annual wind speed, duration of the cleanup operations, and an estimated plane of dispersion were used to estimate the amount of Uranium released. It was assumed that all of the activity in the Plant 1 monitors was due only to Uranium.

(2) COOLING WATER TOWER - Due to the large diameter of the cell fans, emissions from the cooling water tower are assumed to be fugitive in nature. Estimates of cooling water loss were made using emission factors found in AP-42, Section 13.4-4, Table 13.4-1. It was assumed that the uranium loss was proportional to the uranium concentration in the water.

(3) BUILDING 51 - Fugitive emissions were estimated from a group of tanks outside the Advanced Waste Water Treatment facility building;

(4) WASTE PIT 5 - An estimate of Uranium emissions from Waste Pit 5, was made by summing the calculated daily releases of Uranium from the waste pit. Equation 25 from A METHOD FOR ESTIMATING FUGITIVE PARTICULATE EMISSIONS FROM HAZARDOUS WASTE SITES, by James H. Turner, et. al. (EPA/600/2-87/066), was modified to calculate a daily release rate. Emissions were assumed to be zero for days with greater than or equal to 0.01 inches of precipitation. Emissions were also assumed to occur only when wind speeds were greater than 12 mph.

(5) WASTE PIT REMEDIATION ACTION PROJECT (WPRAP) - Railyard - This project involves grading, scraping, and bulldozing of several acres of land. This work also created soil storage piles. Fugitive emissions were generated via wind erosion of barren areas, vehicle traffic, and material handling activities. Estimates of fugitive dust emissions were made using equations available in AP-42 and the State of Ohio's Reasonably Available Control Measures for Fugitive Dust Sources (RACM) manual. Soil concentrations of uranium were used to estimate the amount of uranium released in the dust emissions.

(6) STOCKPILE AREA #1 - Estimates of fugitive dust emissions were made using equations available in the State of Ohio's Reasonably Available Control Measures for Fugitive Dust Sources (RACM) manual. Average surface uranium concentrations were calculated using uranium analyses made on the materials deposited into the stockpile. This concentration was used to estimate the amount of uranium released in the dust emissions.

(7) STOCKPILE AREA #2 - Estimates of radionuclide emissions for Stockpile Area #2 were made in a manner similar to that of Stockpile Area #1. However, specific data for stockpiles in this area was not available. Therefore, estimates of surface area radionuclide concentrations were based on data used in the Stockpile Area #1 calculations. However, since it is known that soils deposited in this area did not exceed the Waste Acceptance Criteria of 1030 ppm of uranium, data above this value was not included in the determination of average surface area concentration for this area.

(8) STOCKPILE AREA #3 - Estimates of radionuclide emissions for Stockpile Area #3 were made in a manner similar to that of Stockpile Area #2.

The estimated dose received by the MEI from the eight sources described above was 1.4 mrem (1.4E-02 mSv). The location of this individual was 1011 meters east-southeast of the center of the FEMP.

SECTION V: CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment. (see 18 U.S.C. 1001).

Name: GLENN GRIFFITHS
DEPUTY DIRECTOR - FEMP

Signature: Glenn Griffiths Date: 5-28-98

LIST OF TABLES

Table 1: POINT SOURCES

Table 2: GROUPED SOURCES

Table 3: POINT SOURCE RADIONUCLIDES

Table 4: NON-POINT SOURCE RADIONUCLIDES

Table 5: CY-1997 STAR FORMAT METEOROLOGICAL FILE

Table 6: SUMMARY OF CY-1997 CAP88-PC DOSE CALCULATIONS

TABLE 1: POINT SOURCES

POINT SOURCE	MONITORED STACK ? (YES/NO)	TYPE CONTROL	CONTROL EFFICIENCY	DISTANCE & DIRECTION FROM SOURCE TO NEAREST RECEPTOR
PLANT 8:				
Oliver Filter	NO	NONE	N/A	969m WSW
BUILDING 11:				
Laundry Dryer Exhaust	YES	HEPA	99.97%	1016m WSW
Respirator Wash. Facility	NO	HEPA	99.97%	1017m WSW
BUILDING 71:				
Process vent	YES	HEPA	99.97%	944m N
BUILDING 78:				
Process vent	NO	HEPA	99.97%	833m N

TABLE 2: GROUPED SOURCES

GROUPED SOURCES	MONITORED STACK ? (YES/NO)	TYPE OF CONTROL	CONTROL EFFICIENCY	DISTANCE & DIRECTION FROM SOURCE TO NEAREST RECEPTOR
PLANT 6:				
Process vents (2)	NO	HEPA	99.97%	854m ESE
PLANT 8:				
Eimco Filters(2)	NO	NONE	N/A	947m WSW
BUILDING 15:				
Perchloric Stacks (12 hoods)	NO	NONE	N/A	921m WSW
HEPA Exhaust (32 hoods)	YES	HEPA	99.97%	921m WSW
General Exhaust (101 hoods)	NO	NONE	N/A	921m WSW
BUILDING 20:				
Water Plant Lab (2 hoods)	NO	NONE	N/A	858m N
BUILDING 53:				
Bio-Assay/Low-Level Lab (6 hoods)	NO	NONE	N/A	939m ESE

TABLE 3: POINT SOURCE RADIONUCLIDES

POINT SOURCE	U-234 (Ci)	U-235 (Ci)	U-236 (Ci)	U-238 (Ci)	Ra-226 (Ci)	Ra-228 (Ci)	Th-228 (Ci)	Th-230 (Ci)	Th-232 (Ci)	Th-234 (Ci)
PLANT 6:										
Process vents (2)	3.610E-07	1.910E-08	1.402E-08	4.033E-07	2.563E-10	1.028E-09	1.084E-08	3.192E-08	1.705E-09	1.595E-06
PLANT 8:										
Oliver Filter	1.44E-07	7.73E-09	5.28E-09	1.91E-07	1.29E-10	5.18E-10	5.47E-09	3.84E-10	8.59E-10	8.04E-07
Eimco Filters (2 filters)	1.76E-06	9.41E-08	6.43E-08	2.32E-06	1.57E-09	6.30E-09	6.65E-08	4.67E-09	1.05E-08	9.78E-06
BUILDING 11:										
Laundry Dryer Exhaust	9.85E-08	1.50E-08	1.50E-08	7.03E-08	3.16E-11	1.27E-10	1.66E-08	6.65E-08	2.36E-08	1.97E-07
Respirator Wash. Facility	6.95E-07	3.68E-08	2.70E-08	7.77E-07	4.94E-10	1.98E-09	2.09E-08	6.15E-08	3.28E-09	3.07E-06
BUILDING 15:										
Perchloric Stacks (12 hoods)	8.66E-05	4.58E-06	3.36E-06	9.67E-05	6.15E-08	2.47E-07	2.60E-06	7.66E-06	4.09E-07	3.83E-04
HEPA Exhaust (32 hoods)	7.48E-08	1.90E-08	1.90E-08	8.64E-08	3.63E-11	1.45E-10	1.10E-08	5.47E-08	1.22E-08	2.26E-07
General Exhaust (101 hoods)	5.91E-06	3.13E-07	2.30E-07	6.61E-06	4.20E-09	1.68E-08	1.78E-07	5.23E-07	2.79E-08	2.61E-05
BUILDING 20:										
Water Plant Lab (2 hoods)	4.65E-10	2.49E-11	1.70E-11	6.15E-10	4.17E-13	1.67E-12	1.76E-11	1.24E-12	2.77E-12	2.59E-09
BUILDING 53:										
Bio-Assay/Low-Level Lab (6 hoods)	1.64E-08	8.69E-10	6.38E-10	1.83E-08	1.17E-11	4.68E-11	4.93E-10	1.45E-09	7.76E-11	7.25E-08
BUILDING 71:										
Process vent	5.26E-06	2.78E-07	2.04E-07	5.87E-06	3.73E-09	1.50E-08	1.58E-07	4.65E-07	2.48E-08	2.32E-05
BUILDING 78:										
Process vent	2.64E-06	1.40E-07	1.03E-07	2.95E-06	1.88E-09	7.52E-09	7.93E-08	2.34E-07	1.25E-08	1.17E-05
TOTALS	1.04E-04	5.51E-06	4.05E-06	1.16E-04	7.40E-08	2.97E-07	3.15E-06	9.12E-06	5.27E-07	4.61E-04

NOTE: To convert from Curies to Becquerels, use 1 Ci = 3.7×10^{10} Bq.

TABLE 4: NON-POINT SOURCE RADIONUCLIDE

NON-POINT SOURCE	U-234 (Ci)	U-235 (Ci)	U-236 (Ci)	U-238 (Ci)	Ra-226 (Ci)	Ra-228 (Ci)	Th-228 (Ci)	Th-230 (Ci)	Th-232 (Ci)	Th-234 (Ci)
PLANT 1: Demolition	2.210E-05	1.170E-06	8.600E-07	2.470E-05	1.570E-08	6.300E-08	6.650E-07	1.960E-06	1.040E-07	9.770E-05
BUILDING 20: Cooling Water Tower	6.764E-08	3.627E-09	2.478E-09	8.943E-08	6.059E-11	2.429E-10	2.564E-09	1.800E-10	4.030E-10	3.770E-07
BUILDING 51: Advanced Wastewater Treatment Facility	1.260E-08	6.760E-10	4.620E-10	1.670E-08	1.130E-11	4.530E-11	4.780E-10	3.350E-11	7.510E-11	7.020E-08
BUILDING 65: Fugitive Emissions	----	----	----	----	----	1.062E-07	1.053E-07	----	1.077E-07	----
WASTE PITS: Waste Pit 5	4.180E-07	1.720E-8	4.310E-08	3.130E-07	2.720E-07	3.350E-08	4.32E-08	4.860E-06	3.350E-08	3.160E-07
WPRAP: Railyard	5.670E-04	3.000E-05	2.200E-05	6.340E-04	4.030E-07	1.620E-06	1.700E-05	5.020E-05	2.680E-06	2.510E-03
STOCKPILES: Stockpile #1	8.330E-04	4.410E-05	3.240E-05	9.310E-04	5.920E-07	2.370E-06	2.500E-05	7.370E-05	3.940E-06	3.680E-03
Stockpile #2	5.950E-04	3.150E-05	2.310E-05	6.650E-04	4.230E-07	1.690E-06	1.790E-05	5.260E-05	2.810E-06	2.630E-03
Stockpile #3	5.150E-04	2.730E-05	2.000E-05	5.760E-04	3.660E-07	1.470E-06	1.550E-05	4.560E-05	2.430E-06	2.280E-03
TOTALS	2.53E-03	1.34E-04	9.84E-05	2.83E-03	2.07E-06	7.35E-06	7.62E-05	2.29E-04	1.21E-05	1.12E-02
ADDITIONAL RADIONUCLIDES	Ac-228 (Ci)	Bi-212 (Ci)	Pb-212 (Ci)	Po-212 (Ci)	Po-216 (Ci)	Ra-224 (Ci)	Tl-208 (Ci)			
BUILDING 65: Fugitive Emissions	1.062E-07	1.053E-07	1.053E-07	6.734E-08	1.053E-07	1.053E-07	3.792E-08			
TOTALS	1.062E-07	1.053E-07	1.053E-07	6.734E-08	1.053E-07	1.053E-07	3.792E-08			

NOTE: To convert from Curies to Becquerels, use 1 Ci = 3.7 x 10^{10} Bq.

TABLE 5: CY-1997 STAR FORMAT METEOROLOGICAL FILE

N	A	0.00000	0.00012	0.00117	0.00023	0.00000	0.00000
NNE	A	0.00000	0.00141	0.00199	0.00035	0.00000	0.00000
NE	A	0.00023	0.00105	0.00199	0.00070	0.00000	0.00000
ENE	A	0.00047	0.00187	0.00176	0.00047	0.00000	0.00000
E	A	0.00023	0.00000	0.00012	0.00000	0.00000	0.00000
ESE	A	0.00012	0.00012	0.00000	0.00000	0.00000	0.00000
SE	A	0.00012	0.00000	0.00012	0.00000	0.00000	0.00000
SSE	A	0.00012	0.00000	0.00000	0.00000	0.00000	0.00000
S	A	0.00035	0.00023	0.00012	0.00023	0.00000	0.00000
SSW	A	0.00012	0.00047	0.00199	0.00000	0.00000	0.00000
SW	A	0.00035	0.00082	0.00363	0.00012	0.00000	0.00000
WSW	A	0.00023	0.00023	0.00258	0.00059	0.00000	0.00000
W	A	0.00047	0.00129	0.00468	0.00059	0.00000	0.00000
WNW	A	0.00012	0.00023	0.00059	0.00023	0.00000	0.00000
NW	A	0.00000	0.00012	0.00117	0.00035	0.00000	0.00000
NNW	A	0.00000	0.00012	0.00094	0.00059	0.00000	0.00000
N	B	0.00000	0.00012	0.00141	0.00000	0.00000	0.00000
NNE	B	0.00000	0.00082	0.00129	0.00070	0.00000	0.00000
NE	B	0.00012	0.00105	0.00199	0.00012	0.00000	0.00000
ENE	B	0.00023	0.00176	0.00304	0.00035	0.00000	0.00000
E	B	0.00012	0.00059	0.00070	0.00023	0.00000	0.00000
ESE	B	0.00000	0.00047	0.00035	0.00000	0.00000	0.00000
SE	B	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
SSE	B	0.00000	0.00012	0.00000	0.00000	0.00000	0.00000
S	B	0.00000	0.00023	0.00070	0.00023	0.00000	0.00000
SSW	B	0.00000	0.00164	0.00363	0.00059	0.00000	0.00000
SW	B	0.00023	0.00433	0.00258	0.00023	0.00000	0.00000
WSW	B	0.00023	0.00246	0.00199	0.00047	0.00000	0.00000
W	B	0.00023	0.00141	0.00316	0.00070	0.00000	0.00000
WNW	B	0.00000	0.00070	0.00246	0.00035	0.00000	0.00000
NW	B	0.00012	0.00047	0.00316	0.00035	0.00000	0.00000
NNW	B	0.00000	0.00035	0.00129	0.00059	0.00000	0.00000
N	C	0.00023	0.00199	0.00199	0.00000	0.00000	0.00000
NNE	C	0.00059	0.00223	0.00223	0.00000	0.00000	0.00000
NE	C	0.00035	0.00293	0.00258	0.00000	0.00000	0.00000
ENE	C	0.00082	0.00422	0.00340	0.00070	0.00000	0.00000
E	C	0.00094	0.00281	0.00070	0.00012	0.00000	0.00000
ESE	C	0.00047	0.00211	0.00035	0.00000	0.00000	0.00000
SE	C	0.00035	0.00129	0.00035	0.00000	0.00000	0.00000
SSE	C	0.00059	0.00141	0.00000	0.00000	0.00000	0.00000
S	C	0.00023	0.00211	0.00152	0.00023	0.00000	0.00000
SSW	C	0.00023	0.00269	0.00328	0.00047	0.00000	0.00000
SW	C	0.00000	0.00468	0.00258	0.00070	0.00000	0.00000
WSW	C	0.00047	0.00445	0.00164	0.00000	0.00000	0.00000
W	C	0.00000	0.00457	0.00269	0.00117	0.00000	0.00000
WNW	C	0.00000	0.00176	0.00375	0.00023	0.00000	0.00000
NW	C	0.00023	0.00269	0.00363	0.00059	0.00000	0.00000
NNW	C	0.00035	0.00234	0.00211	0.00000	0.00000	0.00000
N	D	0.00117	0.00925	0.00668	0.00035	0.00000	0.00000
NNE	D	0.00105	0.00913	0.00586	0.00059	0.00000	0.00000
NE	D	0.00386	0.00960	0.00808	0.00082	0.00000	0.00000
ENE	D	0.00621	0.01651	0.01230	0.00047	0.00000	0.00000
E	D	0.00433	0.00890	0.00293	0.00012	0.00000	0.00000
ESE	D	0.00293	0.00468	0.00047	0.00000	0.00000	0.00000
SE	D	0.00269	0.00316	0.00059	0.00000	0.00000	0.00000
SSE	D	0.00293	0.00410	0.00105	0.00023	0.00000	0.00000
S	D	0.00304	0.00691	0.00468	0.00234	0.00012	0.00000
SSW	D	0.00586	0.01347	0.01077	0.00176	0.00000	0.00000
SW	D	0.00562	0.01792	0.01230	0.00234	0.00000	0.00000
WSW	D	0.00773	0.01581	0.01195	0.00316	0.00000	0.00000
W	D	0.00597	0.01722	0.01850	0.00492	0.00000	0.00000
WNW	D	0.00480	0.01464	0.01171	0.00211	0.00000	0.00012
NW	D	0.00445	0.01031	0.00773	0.00082	0.00000	0.00000
NNW	D	0.00152	0.00785	0.00504	0.00105	0.00000	0.00000
N	E	0.00304	0.00223	0.00023	0.00000	0.00000	0.00000
NNE	E	0.00223	0.00269	0.00023	0.00000	0.00000	0.00000
NE	E	0.00293	0.00363	0.00117	0.00000	0.00000	0.00000
ENE	E	0.00468	0.00796	0.00141	0.00000	0.00000	0.00000
E	E	0.00597	0.00340	0.00070	0.00000	0.00000	0.00000
ESE	E	0.00328	0.00164	0.00000	0.00000	0.00000	0.00000
SE	E	0.00398	0.00199	0.00000	0.00000	0.00000	0.00000
SSE	E	0.00316	0.00351	0.00070	0.00012	0.00000	0.00000
S	E	0.00351	0.00632	0.00304	0.00012	0.00000	0.00000
SSW	E	0.00539	0.01159	0.00351	0.00105	0.00000	0.00000
SW	E	0.01054	0.00995	0.00691	0.00023	0.00000	0.00000
WSW	E	0.01195	0.00761	0.00211	0.00035	0.00000	0.00000
W	E	0.00984	0.00750	0.00152	0.00047	0.00000	0.00000
WNW	E	0.00668	0.00527	0.00293	0.00000	0.00000	0.00000
NW	E	0.00504	0.00457	0.00117	0.00012	0.00000	0.00000
NNW	E	0.00527	0.00269	0.00012	0.00000	0.00000	0.00000
N	F	0.00223	0.00047	0.00000	0.00000	0.00000	0.00000
NNE	F	0.00187	0.00023	0.00047	0.00012	0.00000	0.00000
NE	F	0.00105	0.00105	0.00129	0.00012	0.00000	0.00000
ENE	F	0.00375	0.00293	0.00094	0.00000	0.00000	0.00000
E	F	0.00375	0.00094	0.00023	0.00000	0.00000	0.00000
ESE	F	0.00316	0.00000	0.00000	0.00000	0.00000	0.00000
SE	F	0.00340	0.00012	0.00000	0.00000	0.00000	0.00000
SSE	F	0.00293	0.00035	0.00000	0.00000	0.00000	0.00000
S	F	0.00468	0.00059	0.00000	0.00000	0.00000	0.00000
SSW	F	0.00562	0.00105	0.00023	0.00000	0.00000	0.00000
SW	F	0.01136	0.00199	0.00000	0.00000	0.00000	0.00000
WSW	F	0.01452	0.00234	0.00000	0.00000	0.00000	0.00000
W	F	0.01159	0.00082	0.00000	0.00000	0.00000	0.00000
WNW	F	0.00656	0.00035	0.00000	0.00000	0.00000	0.00000
NW	F	0.00726	0.00070	0.00023	0.00000	0.00000	0.00000
NNW	F	0.00492	0.00094	0.00000	0.00000	0.00000	0.00000
N	G	0.00410	0.00000	0.00000	0.00000	0.00000	0.00000
NNE	G	0.00269	0.00012	0.00000	0.00000	0.00000	0.00000
NE	G	0.00246	0.00012	0.00000	0.00000	0.00000	0.00000
ENE	G	0.00340	0.00023	0.00000	0.00000	0.00000	0.00000
E	G	0.00714	0.00012	0.00000	0.00000	0.00000	0.00000
ESE	G	0.00457	0.00000	0.00000	0.00000	0.00000	0.00000
SE	G	0.00340	0.00000	0.00000	0.00000	0.00000	0.00000
SSE	G	0.00328	0.00000	0.00000	0.00000	0.00000	0.00000
S	G	0.00539	0.00000	0.00000	0.00000	0.00000	0.00000
SSW	G	0.00691	0.00023	0.00000	0.00000	0.00000	0.00000
SW	G	0.01253	0.00000	0.00000	0.00000	0.00000	0.00000
WSW	G	0.01499	0.00012	0.00000	0.00000	0.00000	0.00000
W	G	0.01956	0.00000	0.00000	0.00000	0.00000	0.00000
WNW	G	0.02049	0.00000	0.00000	0.00000	0.00000	0.00000
NW	G	0.01944	0.00012	0.00000	0.00000	0.00000	0.00000
NNW	G	0.01077	0.00012	0.00000	0.00000	0.00000	0.00000

000020

ATTACHMENT E.2

METEOROLOGICAL DATA FILE AND INDIVIDUAL DOSE CAP88-PC FILES

CAP88-PC File: WEATHER DATA - 97-Z025-G1

NON-RADON INDIVIDUAL ASSESSMENTS

SYNOPSIS REPORTS		DOSE AND RISK EQUIVALENT SUMMARIES	
97-Z025-G1	97-AWWT-G1	97-Z025-G1	97-AWWT-G1
97-Z025-G2	97-AWWT-G2	97-Z025-G2	97-AWWT-G2
97-Z022-VENT-G1	97-Z006-G1	97-Z022-VENT-G1	97-Z006-G1
97-Z022-VENT-G2	97-Z006-G2	97-Z022-VENT-G2	97-Z006-G2
97-P239-G1	97-Z024-G1	97-P239-G1	97-Z024-G1
97-P239-G2	97-Z024-G2	97-P239-G2	97-Z024-G2
97-P240-G1	97-Z026-VENT-G1	97-P240-G1	97-Z026-VENT-G1
97-P240-G2	97-Z026-VENT-G2	97-P240-G2	97-Z026-VENT-G2
97-P274-G1	97-Z030-VENT-G1	97-P274-G1	97-Z030-VENT-G1
97-P274-G2	97-Z030-VENT-G2	97-P274-G2	97-Z030-VENT-G2
97-P284-G1	97-Z016-G1	97-P284-G1	97-Z016-G1
97-P284-G2	97-Z016-G2	97-P284-G2	97-Z016-G2
97-Z003-G1	97-Z036a-RR-G1	97-Z003-G1	97-Z036a-RR-G1
97-Z003-G2	97-Z036a-RR-G2	97-Z003-G2	97-Z036a-RR-G2
97-Z004-G1	97-PILE1-G1	97-Z004-G1	97-PILE1-G1
97-Z004-G2	97-PILE1-G2	97-Z004-G2	97-PILE1-G2
97-Z005-G1	97-PILE2-G1	97-Z005-G1	97-PILE2-G1
97-Z005-G2	97-PILE2-G2	97-Z005-G2	97-PILE2-G2
97-Z010-G1	97-PILE3-G1	97-Z010-G1	97-PILE3-G1
97-Z010-G2	97-PILE3-G2	97-Z010-G2	97-PILE3-G2
97-Z012-G1		97-Z012-G1	
97-Z012-G2		97-Z012-G2	

NOTES: (1) The CAP88-PC files listed above have either a G1 or G2 designation. The G1 designation corresponds to receptors 1 through 20. The G2 designation corresponds to receptors 21 through 32 and A through H.

(2) The DOSE AND RISK EQUIVALENT SUMMARIES contain tables of Individual Effective Equivalent Dose Rates. Proceeding from left to right in the tables on pages 5 and 6 in the DOSE AND RISK EQUIVALENT SUMMARIES, the highlighted numbers correspond to receptors 1-20 for the G1 files, and receptors 21-32 and A-H for the G2 files. The highlighted numbers have been tabulated in Table 6 of the annual report.

(3) The distance and direction given for the highlighted EDE corresponds to the receptor's distance and direction from the source.

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Version 1.00

Clean Air Act Assessment Package - 1988

W E A T H E R D A T A

Non-Radon Individual Assessment
Apr 7, 1998 4:05 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Area
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Plant 1 Demolition Activities [G1]

Dataset Name: 97-Z025-G1
Dataset Date: Apr 7, 1998 12:09 am
Wind File: WNDFILES\97STAR.WND

000023

HARMONIC AVERAGE WIND SPEEDS (WIND TOWARDS)

	Pasquill Stability Class							
Dir	A	B	C	D	E	F	G	Wind Frequency
N	1.541	4.105	2.728	2.124	1.683	0.837	0.772	0.047
NNW	0.772	2.572	1.524	1.467	1.329	0.834	0.772	0.025
NW	1.312	0.000	1.922	1.328	1.007	0.791	0.772	0.022
WNW	1.187	3.121	1.941	1.412	1.007	0.772	0.772	0.025
W	1.075	2.837	1.837	1.668	1.092	0.932	0.781	0.045
WSW	2.530	3.114	2.552	2.046	1.482	1.226	0.807	0.080
SW	3.145	3.166	2.685	2.090	1.412	1.687	0.798	0.049
SSW	3.559	3.932	2.358	2.625	1.291	1.020	0.795	0.039
S	4.376	4.145	2.757	2.608	1.132	0.879	0.772	0.037
SSE	4.761	4.321	2.600	2.444	1.022	0.869	0.778	0.049
SE	4.498	3.689	3.161	1.999	1.268	0.841	0.775	0.075
ESE	2.833	3.966	3.645	2.240	1.308	0.800	0.772	0.086
E	3.103	3.294	3.293	2.406	1.202	0.809	0.772	0.119
ENE	3.417	2.898	2.417	1.997	1.160	0.855	0.776	0.108
NE	3.037	2.830	3.171	2.194	1.444	0.862	0.772	0.112
NNE	3.252	3.774	3.086	2.049	1.731	0.891	0.789	0.083

ARITHMETIC AVERAGE WIND SPEEDS (WIND TOWARDS)

	Pasquill Stability Class						
Dir	A	B	C	D	E	F	G
N	3.208	4.526	3.386	3.394	2.547	0.973	0.772
NNW	0.772	2.572	2.041	2.286	2.051	0.964	0.772
NW	2.572	0.000	2.572	1.985	1.372	0.833	0.772
WNW	1.672	3.341	2.498	2.024	1.372	0.772	0.772
W	2.006	3.822	2.592	2.450	1.630	1.284	0.801
WSW	3.530	3.797	3.415	2.939	2.153	1.908	0.886
SW	4.141	3.759	3.257	3.072	2.162	2.845	0.855
SSW	3.936	4.488	3.157	3.248	1.873	1.830	0.849
S	4.620	4.232	3.325	3.228	1.652	1.085	0.772
SSE	5.162	4.771	3.232	3.279	1.425	1.060	0.792
SE	4.790	4.281	3.791	2.979	1.981	1.027	0.783
ESE	4.155	4.270	3.924	3.255	2.118	0.863	0.772
E	4.017	4.088	3.754	3.518	1.904	0.891	0.772
ENE	4.449	3.587	2.893	3.126	1.837	1.022	0.786
NE	3.879	3.283	3.540	3.155	2.372	1.040	0.772
NNE	3.877	4.128	3.704	3.091	2.628	1.166	0.830

FREQUENCIES OF STABILITY CLASSES (WIND TOWARDS)

	Pasquill Stability Class						
Dir	A	B	C	D	E	F	G
N	0.0198	0.0247	0.0872	0.3642	0.2769	0.1123	0.1149
NNW	0.0049	0.0049	0.0813	0.3378	0.3045	0.1333	0.1333
NW	0.0111	0.0000	0.0923	0.2987	0.2769	0.1633	0.1577
WNW	0.0097	0.0332	0.1185	0.3269	0.1990	0.1278	0.1849
W	0.0078	0.0364	0.1014	0.3611	0.2233	0.1091	0.1610
WSW	0.0572	0.0674	0.1144	0.4443	0.1759	0.0954	0.0454
SW	0.0805	0.0665	0.1189	0.4536	0.1568	0.0712	0.0523
SSW	0.0964	0.0723	0.1299	0.4276	0.1324	0.0692	0.0723
S	0.0411	0.0413	0.1138	0.4715	0.1486	0.0730	0.1108
SSE	0.0337	0.0455	0.0980	0.3157	0.1650	0.1197	0.2224
SE	0.0219	0.0548	0.0954	0.3115	0.1456	0.1094	0.2614
ESE	0.0136	0.0408	0.0667	0.3878	0.1729	0.0803	0.2380
E	0.0591	0.0463	0.0709	0.3921	0.1626	0.1044	0.1645
ENE	0.0336	0.0477	0.0608	0.3579	0.2039	0.1561	0.1399
NE	0.0440	0.0658	0.0711	0.3411	0.2468	0.1193	0.1119
NNE	0.0313	0.0710	0.0808	0.3859	0.2609	0.0836	0.0865
TOT	0.0383	0.0505	0.0872	0.3758	0.1984	0.1072	0.1424

ADDITIONAL WEATHER INFORMATION

Average Air Temperature: 10.6 degrees C
283.8 K
Precipitation: 102.3 cm/y
Lid Height: 950 meters
Surface Roughness Length: 0.010 meters
Height Of Wind Measurements: 10.0 meters
Average Wind Speed: 2.452 m/s

Vertical Temperature Gradients:
STABILITY E 0.073 k/m
STABILITY F 0.109 k/m
STABILITY G 0.146 k/m

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Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Apr 7, 1998 4:05 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

1.96E-02

At This Location: 930 Meters East

Source Category: REMEDIATION SITE
Source Type: Area
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Plant 1 Demolition Activities [G1]

Dataset Name: 97-Z025-G1
Dataset Date: Apr 7, 1998 12:09 am
Wind File: WNDFILES\97STAR.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 930 Meters East
Lifetime Fatal Cancer Risk: 2.50E-07

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	5.53E-05
BREAST	6.29E-05
R MAR	2.57E-03
LUNGS	1.49E-01
THYROID	5.39E-05
ENDOST	3.38E-02
RMNDR	1.41E-03
EFFEC	1.96E-02

RADIONUCLIDE EMISSIONS DURING THE YEAR 1997

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	1.00	2.2E-05	2.2E-05
U-235	Y	1.00	1.2E-06	1.2E-06
U-236	Y	1.00	8.6E-07	8.6E-07
U-238	Y	1.00	2.5E-05	2.5E-05
RA-226	W	1.00	1.6E-08	1.6E-08
RA-228	W	1.00	6.3E-08	6.3E-08
TH-228	Y	1.00	6.7E-07	6.7E-07
TH-230	Y	1.00	2.0E-06	2.0E-06
TH-232	Y	1.00	1.0E-07	1.0E-07
TH-234	Y	1.00	9.8E-05	9.8E-05

SITE INFORMATION

Temperature: 11 degrees C
Precipitation: 102 cm/y
Mixing Height: 950 m

SOURCE INFORMATION

Source Number: 1

Source Height (m): 5.00
Area (sq m): 1.60E+04

Plume Rise Pasquill Cat:	A	B	C	D	E	F	G
Zero:	0.00	0.00	0.00	0.00	0.00	0.00	0.00

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

991	930	1644	1327	1071	1017	1241	1344	1383	1549
1553	1592	1530	1530	2142	1655	1380	1360	1672	1537

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Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Apr 7, 1998 4:05 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Area
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Plant 1 Demolition Activities [G1]

Dataset Name: 97-Z025-G1
Dataset Date: Apr 7, 1998 12:09 am
Wind File: WNDFILES\97STAR.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	5.53E-05
BREAST	6.29E-05
R MAR	2.57E-03
LUNGS	1.49E-01
THYROID	5.39E-05
ENDOST	3.38E-02
RMNDR	1.41E-03
EFFEC	1.96E-02

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	1.01E-03
INHALATION	1.86E-02
AIR IMMERSION	1.56E-09
GROUND SURFACE	1.09E-05
INTERNAL	1.96E-02
EXTERNAL	1.09E-05
TOTAL	1.96E-02

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	8.48E-03
U-235	4.25E-04
U-236	3.12E-04
U-238	8.43E-03
RA-226	7.84E-07
RA-228	1.24E-06
TH-228	4.67E-04
TH-230	1.37E-03
TH-232	1.04E-04
TH-234	2.11E-05
TOTAL	1.96E-02

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	2.50E-09
BONE	1.66E-09
THYROID	1.24E-11
BREAST	1.40E-10
LUNG	2.42E-07
STOMACH	9.34E-11
BOWEL	2.48E-10
LIVER	1.17E-10
PANCREAS	5.43E-11
URINARY	2.93E-09
OTHER	6.63E-11
TOTAL	2.50E-07

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	5.35E-09
INHALATION	2.45E-07
AIR IMMERSION	3.47E-14
GROUND SURFACE	2.50E-10
INTERNAL	2.50E-07
EXTERNAL	2.50E-10
TOTAL	2.50E-07

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	1.09E-07
U-235	5.59E-09
U-236	4.02E-09
U-238	1.10E-07
RA-226	1.07E-11
RA-228	1.29E-11
TH-228	9.36E-09
TH-230	1.12E-08
TH-232	5.88E-10
TH-234	6.89E-10
TOTAL	2.50E-07

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

Direction	Distance (m) 991	930	1644	1327	1071	1017	1241
N	6.3E-03	6.9E-03	2.9E-03	4.1E-03	5.6E-03	6.0E-03	4.5E-03
NNW	4.1E-03	4.5E-03	1.9E-03	2.6E-03	3.6E-03	3.9E-03	2.9E-03
NW	4.2E-03	4.6E-03	1.9E-03	2.7E-03	3.7E-03	4.0E-03	3.0E-03
WNW	4.7E-03	5.1E-03	2.2E-03	3.0E-03	4.2E-03	4.5E-03	3.4E-03
W	7.3E-03	8.1E-03	3.4E-03	4.8E-03	6.6E-03	7.1E-03	5.3E-03
WSW	6.7E-03	7.4E-03	3.0E-03	4.3E-03	5.9E-03	6.4E-03	4.7E-03
SW	3.9E-03	4.3E-03	1.8E-03	2.5E-03	3.5E-03	3.7E-03	2.8E-03
SSW	3.5E-03	3.8E-03	1.6E-03	2.3E-03	3.1E-03	3.3E-03	2.5E-03
S	4.3E-03	4.8E-03	2.0E-03	2.8E-03	3.9E-03	4.2E-03	3.1E-03
SSE	9.0E-03	9.8E-03	4.2E-03	5.9E-03	8.1E-03	8.6E-03	6.5E-03
SE	1.5E-02	1.6E-02	6.9E-03	9.7E-03	1.3E-02	1.4E-02	1.1E-02
ESE	1.6E-02	1.7E-02	7.3E-03	1.0E-02	1.4E-02	1.5E-02	1.1E-02
E	1.8E-02	2.0E-02	8.2E-03	1.2E-02	1.6E-02	1.7E-02	1.3E-02
ENE	1.7E-02	1.9E-02	7.7E-03	1.1E-02	1.5E-02	1.6E-02	1.2E-02
NE	1.5E-02	1.6E-02	6.7E-03	9.4E-03	1.3E-02	1.4E-02	1.0E-02
NNE	8.9E-03	9.8E-03	4.1E-03	5.7E-03	8.0E-03	8.6E-03	6.4E-03

Direction	Distance (m) 1344	1383	1549	1553	1592	1530	1530
N	4.0E-03	3.8E-03	3.2E-03	3.2E-03	3.0E-03	3.2E-03	3.2E-03
NNW	2.6E-03	2.5E-03	2.1E-03	2.1E-03	2.0E-03	2.1E-03	2.1E-03
NW	2.7E-03	2.5E-03	2.1E-03	2.1E-03	2.0E-03	2.2E-03	2.2E-03
WNW	3.0E-03	2.8E-03	2.4E-03	2.4E-03	2.3E-03	2.4E-03	2.4E-03
W	4.7E-03	4.5E-03	3.7E-03	3.7E-03	3.6E-03	3.8E-03	3.8E-03
WSW	4.2E-03	4.0E-03	3.3E-03	3.3E-03	3.2E-03	3.4E-03	3.4E-03
SW	2.5E-03	2.4E-03	2.0E-03	2.0E-03	1.9E-03	2.0E-03	2.0E-03
SSW	2.2E-03	2.1E-03	1.8E-03	1.8E-03	1.7E-03	1.8E-03	1.8E-03
S	2.8E-03	2.7E-03	2.2E-03	2.2E-03	2.1E-03	2.3E-03	2.3E-03
SSE	5.8E-03	5.5E-03	4.6E-03	4.6E-03	4.4E-03	4.7E-03	4.7E-03
SE	9.5E-03	9.1E-03	7.6E-03	7.5E-03	7.2E-03	7.7E-03	7.7E-03
ESE	1.0E-02	9.6E-03	8.0E-03	8.0E-03	7.7E-03	8.2E-03	8.2E-03
E	1.1E-02	1.1E-02	9.1E-03	9.0E-03	8.7E-03	9.2E-03	9.2E-03
ENE	1.1E-02	1.0E-02	8.5E-03	8.5E-03	8.1E-03	8.7E-03	8.7E-03
NE	9.2E-03	8.8E-03	7.3E-03	7.3E-03	7.0E-03	7.5E-03	7.5E-03
NNE	5.6E-03	5.4E-03	4.5E-03	4.5E-03	4.3E-03	4.6E-03	4.6E-03

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INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	2142	1655	1380	1360	1672	1537
N	1.9E-03	2.9E-03	3.8E-03	3.9E-03	2.8E-03	3.2E-03
NNW	1.2E-03	1.9E-03	2.5E-03	2.5E-03	1.8E-03	2.1E-03
NW	1.3E-03	1.9E-03	2.5E-03	2.6E-03	1.9E-03	2.1E-03
WNW	1.4E-03	2.1E-03	2.9E-03	2.9E-03	2.1E-03	2.4E-03
W	2.2E-03	3.4E-03	4.5E-03	4.6E-03	3.3E-03	3.8E-03
WSW	2.0E-03	3.0E-03	4.0E-03	4.1E-03	3.0E-03	3.4E-03
SW	1.2E-03	1.8E-03	2.4E-03	2.4E-03	1.8E-03	2.0E-03
SSW	1.1E-03	1.6E-03	2.1E-03	2.2E-03	1.6E-03	1.8E-03
S	1.3E-03	2.0E-03	2.7E-03	2.7E-03	2.0E-03	2.2E-03
SSE	2.7E-03	4.1E-03	5.5E-03	5.7E-03	4.1E-03	4.7E-03
SE	4.4E-03	6.8E-03	9.1E-03	9.3E-03	6.7E-03	7.7E-03
ESE	4.7E-03	7.2E-03	9.7E-03	9.9E-03	7.1E-03	8.1E-03
E	5.3E-03	8.1E-03	1.1E-02	1.1E-02	8.0E-03	9.2E-03
ENE	4.9E-03	7.6E-03	1.0E-02	1.1E-02	7.5E-03	8.6E-03
NE	4.3E-03	6.6E-03	8.8E-03	9.1E-03	6.5E-03	7.4E-03
NNE	2.6E-03	4.0E-03	5.4E-03	5.5E-03	4.0E-03	4.5E-03

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	991	930	1644	1327	1071	1017	1241
N	7.9E-08	8.8E-08	3.6E-08	5.1E-08	7.1E-08	7.6E-08	5.7E-08
NNW	5.1E-08	5.7E-08	2.3E-08	3.3E-08	4.6E-08	4.9E-08	3.7E-08
NW	5.3E-08	5.8E-08	2.4E-08	3.4E-08	4.7E-08	5.1E-08	3.8E-08
WNW	5.9E-08	6.4E-08	2.7E-08	3.8E-08	5.2E-08	5.6E-08	4.2E-08
W	9.3E-08	1.0E-07	4.3E-08	6.0E-08	8.3E-08	9.0E-08	6.7E-08
WSW	8.5E-08	9.4E-08	3.8E-08	5.4E-08	7.5E-08	8.1E-08	6.0E-08
SW	4.9E-08	5.4E-08	2.2E-08	3.1E-08	4.4E-08	4.7E-08	3.5E-08
SSW	4.3E-08	4.8E-08	2.0E-08	2.8E-08	3.9E-08	4.2E-08	3.1E-08
S	5.4E-08	6.0E-08	2.5E-08	3.5E-08	4.9E-08	5.2E-08	3.9E-08
SSE	1.1E-07	1.2E-07	5.3E-08	7.4E-08	1.0E-07	1.1E-07	8.3E-08
SE	1.9E-07	2.0E-07	8.7E-08	1.2E-07	1.7E-07	1.8E-07	1.4E-07
ESE	2.0E-07	2.2E-07	9.3E-08	1.3E-07	1.8E-07	1.9E-07	1.4E-07
E	2.3E-07	2.5E-07	1.0E-07	1.5E-07	2.0E-07	2.2E-07	1.6E-07
ENE	2.2E-07	2.4E-07	9.8E-08	1.4E-07	1.9E-07	2.1E-07	1.5E-07
NE	1.9E-07	2.1E-07	8.4E-08	1.2E-07	1.7E-07	1.8E-07	1.3E-07
NNE	1.1E-07	1.3E-07	5.1E-08	7.3E-08	1.0E-07	1.1E-07	8.1E-08

	Distance (m)						
Direction	1344	1383	1549	1553	1592	1530	1530
N	5.0E-08	4.8E-08	4.0E-08	4.0E-08	3.8E-08	4.1E-08	4.1E-08
NNW	3.2E-08	3.1E-08	2.6E-08	2.6E-08	2.5E-08	2.6E-08	2.6E-08
NW	3.3E-08	3.2E-08	2.6E-08	2.6E-08	2.5E-08	2.7E-08	2.7E-08
WNW	3.7E-08	3.6E-08	3.0E-08	2.9E-08	2.8E-08	3.0E-08	3.0E-08
W	5.9E-08	5.6E-08	4.7E-08	4.7E-08	4.5E-08	4.8E-08	4.8E-08
WSW	5.3E-08	5.0E-08	4.2E-08	4.2E-08	4.0E-08	4.3E-08	4.3E-08
SW	3.1E-08	2.9E-08	2.4E-08	2.4E-08	2.3E-08	2.5E-08	2.5E-08
SSW	2.7E-08	2.6E-08	2.2E-08	2.2E-08	2.1E-08	2.2E-08	2.2E-08
S	3.5E-08	3.3E-08	2.8E-08	2.7E-08	2.6E-08	2.8E-08	2.8E-08
SSE	7.3E-08	7.0E-08	5.8E-08	5.8E-08	5.6E-08	5.9E-08	5.9E-08
SE	1.2E-07	1.2E-07	9.6E-08	9.6E-08	9.2E-08	9.8E-08	9.8E-08
ESE	1.3E-07	1.2E-07	1.0E-07	1.0E-07	9.7E-08	1.0E-07	1.0E-07
E	1.5E-07	1.4E-07	1.1E-07	1.1E-07	1.1E-07	1.2E-07	1.2E-07
ENE	1.4E-07	1.3E-07	1.1E-07	1.1E-07	1.0E-07	1.1E-07	1.1E-07
NE	1.2E-07	1.1E-07	9.3E-08	9.2E-08	8.9E-08	9.5E-08	9.5E-08
NNE	7.1E-08	6.8E-08	5.6E-08	5.6E-08	5.4E-08	5.8E-08	5.8E-08

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INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	2142	1655	1380	1360	1672	1537
N	2.3E-08	3.6E-08	4.8E-08	4.9E-08	3.5E-08	4.0E-08
NNW	1.5E-08	2.3E-08	3.1E-08	3.2E-08	2.3E-08	2.6E-08
NW	1.5E-08	2.4E-08	3.2E-08	3.2E-08	2.3E-08	2.7E-08
WNW	1.7E-08	2.7E-08	3.6E-08	3.7E-08	2.6E-08	3.0E-08
W	2.7E-08	4.2E-08	5.7E-08	5.8E-08	4.1E-08	4.7E-08
WSW	2.4E-08	3.7E-08	5.0E-08	5.2E-08	3.7E-08	4.2E-08
SW	1.4E-08	2.2E-08	2.9E-08	3.0E-08	2.2E-08	2.5E-08
SSW	1.3E-08	2.0E-08	2.6E-08	2.7E-08	1.9E-08	2.2E-08
S	1.6E-08	2.5E-08	3.3E-08	3.4E-08	2.4E-08	2.8E-08
SSE	3.4E-08	5.2E-08	7.0E-08	7.2E-08	5.1E-08	5.9E-08
SE	5.6E-08	8.6E-08	1.2E-07	1.2E-07	8.5E-08	9.7E-08
ESE	5.9E-08	9.2E-08	1.2E-07	1.3E-07	9.0E-08	1.0E-07
E	6.6E-08	1.0E-07	1.4E-07	1.4E-07	1.0E-07	1.2E-07
ENE	6.2E-08	9.7E-08	1.3E-07	1.3E-07	9.5E-08	1.1E-07
NE	5.4E-08	8.3E-08	1.1E-07	1.1E-07	8.2E-08	9.4E-08
NNE	3.3E-08	5.1E-08	6.8E-08	7.0E-08	5.0E-08	5.7E-08

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Apr 7, 1998 4:06 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

1.66E-02

At This Location: 1044 Meters East

Source Category: REMEDIATION SITE
Source Type: Area
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Plant 1 Demolition Activities [G2]

Dataset Name: 97-Z025-G2
Dataset Date: Apr 7, 1998 12:11 am
Wind File: WNDFILES\97STAR.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 1044 Meters East
Lifetime Fatal Cancer Risk: 2.12E-07

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	4.63E-05
BREAST	5.27E-05
R MAR	2.16E-03
LUNGS	1.26E-01
THYROID	4.51E-05
ENDOST	2.84E-02
RMNDR	1.17E-03
EFFEC	1.66E-02

RADIONUCLIDE EMISSIONS DURING THE YEAR 1997

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	1.00	2.2E-05	2.2E-05
U-235	Y	1.00	1.2E-06	1.2E-06
U-236	Y	1.00	8.6E-07	8.6E-07
U-238	Y	1.00	2.5E-05	2.5E-05
RA-226	W	1.00	1.6E-08	1.6E-08
RA-228	W	1.00	6.3E-08	6.3E-08
TH-228	Y	1.00	6.7E-07	6.7E-07
TH-230	Y	1.00	2.0E-06	2.0E-06
TH-232	Y	1.00	1.0E-07	1.0E-07
TH-234	Y	1.00	9.8E-05	9.8E-05

SITE INFORMATION

Temperature:	11 degrees C
Precipitation:	102 cm/y
Mixing Height:	950 m

SOURCE INFORMATION

Source Number: 1

Source Height (m): 5.00
Area (sq m): 1.60E+04

Plume Rise Pasquill Cat:	A	B	C	D	E	F	G
Zero:	0.00	0.00	0.00	0.00	0.00	0.00	0.00

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

1044	1247	1861	2014	2604	2227	2559	1338	1730	2361
2421	1405	2285	1356	1635	1728	1684	1933	1961	1635

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Apr 7, 1998 4:06 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Area
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Plant 1 Demolition Activities [G2]

Dataset Name: 97-Z025-G2
Dataset Date: Apr 7, 1998 12:11 am
Wind File: WNDFILES\97STAR.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	4.63E-05
BREAST	5.27E-05
R MAR	2.16E-03
LUNGS	1.26E-01
THYROID	4.51E-05
ENDOST	2.84E-02
RMNDR	1.17E-03
EFFEC	1.66E-02

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	8.37E-04
INHALATION	1.57E-02
AIR IMMERSION	1.32E-09
GROUND SURFACE	9.22E-06
INTERNAL	1.66E-02
EXTERNAL	9.22E-06
TOTAL	1.66E-02

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	7.16E-03
U-235	3.59E-04
U-236	2.64E-04
U-238	7.12E-03
RA-226	6.57E-07
RA-228	1.04E-06
TH-228	3.95E-04
TH-230	1.16E-03
TH-232	8.83E-05
TH-234	1.77E-05
TOTAL	1.66E-02

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	2.10E-09
BONE	1.39E-09
THYROID	1.04E-11
BREAST	1.17E-10
LUNG	2.05E-07
STOMACH	7.82E-11
BOWEL	2.07E-10
LIVER	9.81E-11
PANCREAS	4.54E-11
URINARY	2.43E-09
OTHER	5.55E-11
TOTAL	2.12E-07

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	4.44E-09
INHALATION	2.07E-07
AIR IMMERSION	2.94E-14
GROUND SURFACE	2.12E-10
INTERNAL	2.11E-07
EXTERNAL	2.12E-10
TOTAL	2.12E-07

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	9.23E-08
U-235	4.72E-09
U-236	3.40E-09
U-238	9.26E-08
RA-226	8.99E-12
RA-228	1.08E-11
TH-228	7.92E-09
TH-230	9.51E-09
TH-232	4.97E-10
TH-234	5.81E-10
TOTAL	2.12E-07

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	1044	1247	1861	2014	2604	2227	2559
N	5.8E-03	4.4E-03	2.3E-03	2.0E-03	1.3E-03	1.7E-03	1.4E-03
NNW	3.7E-03	2.9E-03	1.5E-03	1.3E-03	8.9E-04	1.1E-03	9.1E-04
NW	3.8E-03	2.9E-03	1.5E-03	1.4E-03	9.0E-04	1.2E-03	9.3E-04
WNW	4.3E-03	3.3E-03	1.7E-03	1.5E-03	1.0E-03	1.3E-03	1.0E-03
W	6.8E-03	5.2E-03	2.7E-03	2.4E-03	1.6E-03	2.0E-03	1.6E-03
WSW	6.1E-03	4.7E-03	2.4E-03	2.1E-03	1.4E-03	1.8E-03	1.5E-03
SW	3.6E-03	2.7E-03	1.5E-03	1.3E-03	8.6E-04	1.1E-03	8.8E-04
SSW	3.2E-03	2.4E-03	1.3E-03	1.1E-03	7.7E-04	9.8E-04	7.9E-04
S	4.0E-03	3.1E-03	1.6E-03	1.4E-03	9.5E-04	1.2E-03	9.8E-04
SSE	8.3E-03	6.4E-03	3.4E-03	2.9E-03	1.9E-03	2.5E-03	2.0E-03
SE	1.4E-02	1.1E-02	5.6E-03	4.8E-03	3.2E-03	4.1E-03	3.3E-03
ESE	1.5E-02	1.1E-02	5.9E-03	5.1E-03	3.3E-03	4.4E-03	3.4E-03
E	1.7E-02	1.3E-02	6.6E-03	5.8E-03	3.8E-03	4.9E-03	3.9E-03
ENE	1.6E-02	1.2E-02	6.2E-03	5.4E-03	3.5E-03	4.6E-03	3.6E-03
NE	1.4E-02	1.0E-02	5.4E-03	4.7E-03	3.1E-03	4.0E-03	3.1E-03
NNE	8.2E-03	6.3E-03	3.3E-03	2.9E-03	1.9E-03	2.4E-03	1.9E-03

	Distance (m)						
Direction	1338	1730	2361	2421	1405	2285	1356
N	4.0E-03	2.6E-03	1.6E-03	1.5E-03	3.7E-03	1.7E-03	3.9E-03
NNW	2.6E-03	1.7E-03	1.0E-03	1.0E-03	2.4E-03	1.1E-03	2.5E-03
NW	2.6E-03	1.7E-03	1.1E-03	1.0E-03	2.4E-03	1.1E-03	2.6E-03
WNW	3.0E-03	2.0E-03	1.2E-03	1.1E-03	2.7E-03	1.2E-03	2.9E-03
W	4.7E-03	3.1E-03	1.8E-03	1.8E-03	4.3E-03	2.0E-03	4.6E-03
WSW	4.2E-03	2.8E-03	1.7E-03	1.6E-03	3.9E-03	1.8E-03	4.1E-03
SW	2.5E-03	1.6E-03	1.0E-03	9.6E-04	2.3E-03	1.1E-03	2.4E-03
SSW	2.2E-03	1.5E-03	9.0E-04	8.6E-04	2.0E-03	9.4E-04	2.1E-03
S	2.8E-03	1.8E-03	1.1E-03	1.1E-03	2.6E-03	1.2E-03	2.7E-03
SSE	5.8E-03	3.8E-03	2.3E-03	2.2E-03	5.3E-03	2.4E-03	5.7E-03
SE	9.5E-03	6.3E-03	3.7E-03	3.6E-03	8.8E-03	3.9E-03	9.3E-03
ESE	1.0E-02	6.7E-03	4.0E-03	3.8E-03	9.4E-03	4.2E-03	9.9E-03
E	1.1E-02	7.5E-03	4.4E-03	4.3E-03	1.1E-02	4.7E-03	1.1E-02
ENE	1.1E-02	7.0E-03	4.2E-03	4.0E-03	9.9E-03	4.4E-03	1.1E-02
NE	9.3E-03	6.1E-03	3.6E-03	3.5E-03	8.6E-03	3.8E-03	9.1E-03
NNE	5.6E-03	3.7E-03	2.2E-03	2.1E-03	5.2E-03	2.3E-03	5.5E-03

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1635	1728	1684	1933	1961	1635
N	2.9E-03	2.6E-03	2.7E-03	2.2E-03	2.1E-03	2.9E-03
NNW	1.9E-03	1.7E-03	1.8E-03	1.4E-03	1.4E-03	1.9E-03
NW	1.9E-03	1.8E-03	1.8E-03	1.5E-03	1.4E-03	1.9E-03
WNW	2.2E-03	2.0E-03	2.1E-03	1.6E-03	1.6E-03	2.2E-03
W	3.4E-03	3.1E-03	3.2E-03	2.6E-03	2.5E-03	3.4E-03
WSW	3.0E-03	2.8E-03	2.9E-03	2.3E-03	2.2E-03	3.0E-03
SW	1.8E-03	1.6E-03	1.7E-03	1.4E-03	1.3E-03	1.8E-03
SSW	1.6E-03	1.5E-03	1.5E-03	1.2E-03	1.2E-03	1.6E-03
S	2.0E-03	1.8E-03	1.9E-03	1.5E-03	1.5E-03	2.0E-03
SSE	4.2E-03	3.8E-03	4.0E-03	3.2E-03	3.1E-03	4.2E-03
SE	6.9E-03	6.3E-03	6.6E-03	5.2E-03	5.1E-03	6.9E-03
ESE	7.3E-03	6.7E-03	7.0E-03	5.5E-03	5.4E-03	7.3E-03
E	8.3E-03	7.5E-03	7.9E-03	6.2E-03	6.0E-03	8.3E-03
ENE	7.7E-03	7.1E-03	7.4E-03	5.8E-03	5.7E-03	7.7E-03
NE	6.7E-03	6.1E-03	6.4E-03	5.0E-03	4.9E-03	6.7E-03
NNE	4.1E-03	3.7E-03	3.9E-03	3.1E-03	3.0E-03	4.1E-03

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m) 1044	1247	1861	2014	2604	2227	2559
N	7.3E-08	5.6E-08	2.9E-08	2.5E-08	1.7E-08	2.2E-08	1.7E-08
NNW	4.7E-08	3.6E-08	1.9E-08	1.6E-08	1.1E-08	1.4E-08	1.1E-08
NW	4.8E-08	3.7E-08	1.9E-08	1.7E-08	1.1E-08	1.4E-08	1.1E-08
WNW	5.4E-08	4.2E-08	2.2E-08	1.9E-08	1.2E-08	1.6E-08	1.3E-08
W	8.6E-08	6.6E-08	3.4E-08	3.0E-08	1.9E-08	2.5E-08	2.0E-08
WSW	7.8E-08	5.9E-08	3.1E-08	2.7E-08	1.7E-08	2.3E-08	1.8E-08
SW	4.5E-08	3.4E-08	1.8E-08	1.6E-08	1.0E-08	1.3E-08	1.1E-08
SSW	4.0E-08	3.1E-08	1.6E-08	1.4E-08	9.2E-09	1.2E-08	9.5E-09
S	5.0E-08	3.9E-08	2.0E-08	1.8E-08	1.2E-08	1.5E-08	1.2E-08
SSE	1.1E-07	8.2E-08	4.3E-08	3.7E-08	2.4E-08	3.1E-08	2.5E-08
SE	1.7E-07	1.4E-07	7.0E-08	6.1E-08	4.0E-08	5.2E-08	4.1E-08
ESE	1.9E-07	1.4E-07	7.5E-08	6.5E-08	4.2E-08	5.5E-08	4.3E-08
E	2.1E-07	1.6E-07	8.4E-08	7.3E-08	4.7E-08	6.2E-08	4.9E-08
ENE	2.0E-07	1.5E-07	7.9E-08	6.9E-08	4.4E-08	5.8E-08	4.6E-08
NE	1.7E-07	1.3E-07	6.8E-08	5.9E-08	3.8E-08	5.0E-08	4.0E-08
NNE	1.0E-07	8.0E-08	4.1E-08	3.6E-08	2.3E-08	3.1E-08	2.4E-08

Direction	Distance (m) 1338	1730	2361	2421	1405	2285	1356
N	5.0E-08	3.3E-08	2.0E-08	1.9E-08	4.6E-08	2.1E-08	4.9E-08
NNW	3.2E-08	2.1E-08	1.3E-08	1.2E-08	3.0E-08	1.3E-08	3.2E-08
NW	3.3E-08	2.2E-08	1.3E-08	1.2E-08	3.1E-08	1.4E-08	3.2E-08
WNW	3.7E-08	2.4E-08	1.5E-08	1.4E-08	3.4E-08	1.5E-08	3.7E-08
W	5.9E-08	3.9E-08	2.3E-08	2.2E-08	5.5E-08	2.4E-08	5.8E-08
WSW	5.3E-08	3.5E-08	2.1E-08	2.0E-08	4.9E-08	2.2E-08	5.2E-08
SW	3.1E-08	2.0E-08	1.2E-08	1.2E-08	2.8E-08	1.3E-08	3.0E-08
SSW	2.7E-08	1.8E-08	1.1E-08	1.0E-08	2.5E-08	1.1E-08	2.7E-08
S	3.5E-08	2.3E-08	1.4E-08	1.3E-08	3.2E-08	1.4E-08	3.4E-08
SSE	7.3E-08	4.8E-08	2.8E-08	2.7E-08	6.8E-08	3.0E-08	7.2E-08
SE	1.2E-07	8.0E-08	4.7E-08	4.5E-08	1.1E-07	5.0E-08	1.2E-07
ESE	1.3E-07	8.5E-08	5.0E-08	4.8E-08	1.2E-07	5.3E-08	1.3E-07
E	1.5E-07	9.6E-08	5.6E-08	5.4E-08	1.3E-07	5.9E-08	1.4E-07
ENE	1.4E-07	9.0E-08	5.3E-08	5.0E-08	1.3E-07	5.6E-08	1.3E-07
NE	1.2E-07	7.7E-08	4.5E-08	4.3E-08	1.1E-07	4.8E-08	1.2E-07
NNE	7.1E-08	4.7E-08	2.8E-08	2.7E-08	6.6E-08	2.9E-08	7.0E-08

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1635	1728	1684	1933	1961	1635
N	3.6E-08	3.3E-08	3.5E-08	2.7E-08	2.7E-08	3.6E-08
NNW	2.3E-08	2.1E-08	2.2E-08	1.8E-08	1.7E-08	2.3E-08
NW	2.4E-08	2.2E-08	2.3E-08	1.8E-08	1.8E-08	2.4E-08
WNW	2.7E-08	2.5E-08	2.6E-08	2.0E-08	2.0E-08	2.7E-08
W	4.3E-08	3.9E-08	4.1E-08	3.2E-08	3.1E-08	4.3E-08
WSW	3.8E-08	3.5E-08	3.6E-08	2.9E-08	2.8E-08	3.8E-08
SW	2.2E-08	2.0E-08	2.1E-08	1.7E-08	1.6E-08	2.2E-08
SSW	2.0E-08	1.8E-08	1.9E-08	1.5E-08	1.5E-08	2.0E-08
S	2.5E-08	2.3E-08	2.4E-08	1.9E-08	1.8E-08	2.5E-08
SSE	5.3E-08	4.8E-08	5.0E-08	4.0E-08	3.9E-08	5.3E-08
SE	8.8E-08	8.0E-08	8.4E-08	6.6E-08	6.4E-08	8.8E-08
ESE	9.3E-08	8.5E-08	8.9E-08	7.0E-08	6.8E-08	9.3E-08
E	1.1E-07	9.6E-08	1.0E-07	7.9E-08	7.7E-08	1.1E-07
ENE	9.8E-08	9.0E-08	9.4E-08	7.4E-08	7.2E-08	9.8E-08
NE	8.5E-08	7.7E-08	8.1E-08	6.4E-08	6.2E-08	8.5E-08
NNE	5.1E-08	4.7E-08	4.9E-08	3.9E-08	3.8E-08	5.1E-08

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Apr 16, 1998 12:08 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

5.76E-04

At This Location: 854 Meters East Northeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Plant 6 - Stack Emissions [G1]

Dataset Name: 97-Z022-VENT-G1
Dataset Date: Apr 16, 1998 12:07 am
Wind File: WNDFILES\97STAR.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 854 Meters East Northeast
Lifetime Fatal Cancer Risk: 7.45E-09

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	1.10E-06
BREAST	1.24E-06
R MAR	6.25E-05
LUNGS	4.46E-03
THYROID	1.07E-06
ENDOST	8.14E-04
RMNDR	2.69E-05
EFFEC	5.76E-04

RADIONUCLIDE EMISSIONS DURING THE YEAR 1997

Nuclide	Class	Size	Source #1 Ci/y	Source #2 Ci/y	Source #3 Ci/y	TOTAL Ci/y
U-234	Y	0.30	1.8E-07	1.8E-07	1.7E-07	5.4E-07
U-235	Y	1.00	9.6E-09	9.6E-09	9.2E-09	2.8E-08
U-236	Y	1.00	7.0E-09	7.0E-09	6.8E-09	2.1E-08
U-238	Y	0.30	2.0E-07	2.0E-07	1.9E-07	6.0E-07
RA-226	W	0.30	1.3E-10	1.3E-10	1.2E-10	3.8E-10
RA-228	W	0.30	5.1E-10	5.1E-10	5.0E-10	1.5E-09
TH-228	Y	0.30	5.4E-09	5.4E-09	5.2E-09	1.6E-08
TH-230	Y	0.30	1.6E-08	1.6E-08	1.5E-08	4.7E-08
TH-232	Y	0.30	8.5E-10	8.5E-10	8.2E-10	2.5E-09
TH-234	Y	0.30	8.0E-07	8.0E-07	7.7E-07	2.4E-06

SITE INFORMATION

Temperature: 11 degrees C
Precipitation: 102 cm/y
Mixing Height: 950 m

SOURCE INFORMATION

Source Number:	1	2	3
Stack Height (m):	8.00	8.00	1.00
Diameter (m):	0.30	0.30	0.15
Plume Rise Momentum (m/s): (Exit Velocity)	9.44E-01	9.44E-01	2.59E+01

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

1229	1230	2117	1835	1574	1319	1358	1386	1413	1513
1496	1432	1266	1240	1752	1203	871	854	1428	1485

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Apr 16, 1998 12:08 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Plant 6 - Stack Emissions [G1]

Dataset Name: 97-Z022-VENT-G1
Dataset Date: Apr 16, 1998 12:07 am
Wind File: WNDFILES\97STAR.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	1.10E-06
BREAST	1.24E-06
R MAR	6.25E-05
LUNGS	4.46E-03
THYROID	1.07E-06
ENDOST	8.14E-04
RMNDR	2.69E-05
EFFEC	5.76E-04

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	1.88E-05
INHALATION	5.57E-04
AIR IMMERSION	2.74E-11
GROUND SURFACE	2.01E-07
INTERNAL	5.75E-04
EXTERNAL	2.01E-07
TOTAL	5.76E-04

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	2.53E-04
U-235	7.51E-06
U-236	5.50E-06
U-238	2.52E-04
RA-226	1.83E-08
RA-228	2.65E-08
TH-228	1.41E-05
TH-230	4.03E-05
TH-232	3.13E-06
TH-234	4.68E-07
TOTAL	5.76E-04

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	5.90E-11
BONE	3.90E-11
THYROID	2.41E-13
BREAST	2.68E-12
LUNG	7.28E-09
STOMACH	1.82E-12
BOWEL	4.68E-12
LIVER	2.61E-12
PANCREAS	1.07E-12
URINARY	5.55E-11
OTHER	1.31E-12
TOTAL	7.45E-09

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	9.99E-11
INHALATION	7.34E-09
AIR IMMERSION	6.10E-16
GROUND SURFACE	4.63E-12
INTERNAL	7.44E-09
EXTERNAL	4.63E-12
TOTAL	7.45E-09

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	3.30E-09
U-235	9.85E-11
U-236	7.07E-11
U-238	3.31E-09
RA-226	2.97E-13
RA-228	3.13E-13
TH-228	2.85E-10
TH-230	3.38E-10
TH-232	1.78E-11
TH-234	1.91E-11
TOTAL	7.45E-09

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	1229	1230	2117	1835	1574	1319	1358
N	1.4E-04	1.4E-04	6.9E-05	8.5E-05	1.0E-04	1.3E-04	1.2E-04
NNW	9.2E-05	9.2E-05	4.5E-05	5.5E-05	6.8E-05	8.5E-05	8.2E-05
NW	9.4E-05	9.4E-05	4.6E-05	5.7E-05	6.9E-05	8.7E-05	8.4E-05
WNW	1.0E-04	1.0E-04	5.1E-05	6.2E-05	7.5E-05	9.3E-05	9.0E-05
W	1.6E-04	1.6E-04	8.1E-05	9.8E-05	1.2E-04	1.5E-04	1.4E-04
WSW	1.7E-04	1.7E-04	7.5E-05	9.3E-05	1.2E-04	1.5E-04	1.4E-04
SW	9.4E-05	9.4E-05	4.4E-05	5.4E-05	6.7E-05	8.5E-05	8.2E-05
SSW	8.0E-05	8.0E-05	3.9E-05	4.8E-05	5.9E-05	7.4E-05	7.1E-05
S	9.5E-05	9.5E-05	4.8E-05	5.8E-05	7.1E-05	8.7E-05	8.4E-05
SSE	1.8E-04	1.8E-04	9.8E-05	1.2E-04	1.4E-04	1.7E-04	1.7E-04
SE	2.9E-04	2.9E-04	1.6E-04	1.9E-04	2.3E-04	2.7E-04	2.7E-04
ESE	3.1E-04	3.1E-04	1.7E-04	2.0E-04	2.4E-04	2.9E-04	2.8E-04
E	3.8E-04	3.8E-04	1.9E-04	2.4E-04	2.9E-04	3.5E-04	3.4E-04
ENE	3.8E-04	3.8E-04	1.9E-04	2.3E-04	2.8E-04	3.5E-04	3.4E-04
NE	3.3E-04	3.3E-04	1.6E-04	2.0E-04	2.4E-04	3.0E-04	2.9E-04
NNE	2.1E-04	2.1E-04	9.9E-05	1.2E-04	1.5E-04	1.9E-04	1.8E-04

	Distance (m)						
Direction	1386	1413	1513	1496	1432	1266	1240
N	1.2E-04	1.2E-04	1.1E-04	1.1E-04	1.2E-04	1.4E-04	1.4E-04
NNW	8.0E-05	7.8E-05	7.1E-05	7.2E-05	7.7E-05	8.9E-05	9.1E-05
NW	8.1E-05	8.0E-05	7.3E-05	7.4E-05	7.8E-05	9.1E-05	9.3E-05
WNW	8.8E-05	8.6E-05	7.9E-05	8.0E-05	8.5E-05	9.7E-05	1.0E-04
W	1.4E-04	1.4E-04	1.3E-04	1.3E-04	1.4E-04	1.6E-04	1.6E-04
WSW	1.4E-04	1.4E-04	1.2E-04	1.3E-04	1.3E-04	1.6E-04	1.6E-04
SW	8.0E-05	7.8E-05	7.1E-05	7.2E-05	7.6E-05	9.0E-05	9.3E-05
SSW	6.9E-05	6.7E-05	6.2E-05	6.3E-05	6.6E-05	7.7E-05	7.9E-05
S	8.2E-05	8.1E-05	7.4E-05	7.5E-05	7.9E-05	9.2E-05	9.4E-05
SSE	1.6E-04	1.6E-04	1.5E-04	1.5E-04	1.6E-04	1.8E-04	1.8E-04
SE	2.6E-04	2.6E-04	2.4E-04	2.4E-04	2.5E-04	2.8E-04	2.9E-04
ESE	2.8E-04	2.7E-04	2.5E-04	2.6E-04	2.7E-04	3.0E-04	3.1E-04
E	3.3E-04	3.2E-04	3.0E-04	3.0E-04	3.2E-04	3.7E-04	3.7E-04
ENE	3.3E-04	3.2E-04	2.9E-04	3.0E-04	3.2E-04	3.7E-04	3.8E-04
NE	2.8E-04	2.8E-04	2.5E-04	2.6E-04	2.7E-04	3.2E-04	3.3E-04
NNE	1.8E-04	1.7E-04	1.6E-04	1.6E-04	1.7E-04	2.0E-04	2.1E-04

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INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1752	1203	871	854	1428	1485
N	9.0E-05	1.4E-04	2.1E-04	2.1E-04	1.2E-04	1.1E-04
NNW	5.9E-05	9.5E-05	1.4E-04	1.4E-04	7.7E-05	7.3E-05
NW	6.0E-05	9.7E-05	1.4E-04	1.4E-04	7.8E-05	7.5E-05
WNW	6.6E-05	1.0E-04	1.4E-04	1.5E-04	8.5E-05	8.1E-05
W	1.0E-04	1.7E-04	2.3E-04	2.4E-04	1.4E-04	1.3E-04
WSW	1.0E-04	1.7E-04	2.7E-04	2.8E-04	1.3E-04	1.3E-04
SW	5.8E-05	9.6E-05	1.5E-04	1.5E-04	7.7E-05	7.3E-05
SSW	5.1E-05	8.2E-05	1.2E-04	1.2E-04	6.6E-05	6.3E-05
S	6.2E-05	9.7E-05	1.4E-04	1.4E-04	8.0E-05	7.6E-05
SSE	1.2E-04	1.9E-04	2.5E-04	2.5E-04	1.6E-04	1.5E-04
SE	2.0E-04	3.0E-04	3.8E-04	3.8E-04	2.5E-04	2.4E-04
ESE	2.1E-04	3.2E-04	4.0E-04	4.1E-04	2.7E-04	2.6E-04
E	2.5E-04	3.9E-04	5.3E-04	5.3E-04	3.2E-04	3.1E-04
ENE	2.4E-04	3.9E-04	5.6E-04	5.8E-04	3.2E-04	3.0E-04
NE	2.1E-04	3.4E-04	4.9E-04	5.0E-04	2.7E-04	2.6E-04
NNE	1.3E-04	2.1E-04	3.2E-04	3.2E-04	1.7E-04	1.6E-04

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m) 1229	1230	2117	1835	1574	1319	1358
N	1.8E-09	1.8E-09	8.8E-10	1.1E-09	1.3E-09	1.7E-09	1.6E-09
NNW	1.2E-09	1.2E-09	5.7E-10	7.0E-10	8.6E-10	1.1E-09	1.0E-09
NW	1.2E-09	1.2E-09	5.8E-10	7.1E-10	8.8E-10	1.1E-09	1.1E-09
WNW	1.3E-09	1.3E-09	6.5E-10	7.9E-10	9.6E-10	1.2E-09	1.1E-09
W	2.1E-09	2.1E-09	1.0E-09	1.3E-09	1.5E-09	1.9E-09	1.8E-09
WSW	2.1E-09	2.1E-09	9.6E-10	1.2E-09	1.5E-09	1.9E-09	1.9E-09
SW	1.2E-09	1.2E-09	5.5E-10	6.8E-10	8.5E-10	1.1E-09	1.0E-09
SSW	1.0E-09	1.0E-09	4.9E-10	6.0E-10	7.4E-10	9.3E-10	9.0E-10
S	1.2E-09	1.2E-09	6.0E-10	7.4E-10	9.0E-10	1.1E-09	1.1E-09
SSE	2.4E-09	2.4E-09	1.2E-09	1.5E-09	1.8E-09	2.2E-09	2.1E-09
SE	3.8E-09	3.8E-09	2.0E-09	2.5E-09	2.9E-09	3.5E-09	3.4E-09
ESE	4.0E-09	4.0E-09	2.2E-09	2.6E-09	3.1E-09	3.7E-09	3.6E-09
E	4.9E-09	4.9E-09	2.5E-09	3.0E-09	3.7E-09	4.5E-09	4.4E-09
ENE	4.9E-09	4.9E-09	2.4E-09	2.9E-09	3.6E-09	4.5E-09	4.4E-09
NE	4.3E-09	4.3E-09	2.1E-09	2.5E-09	3.1E-09	3.9E-09	3.8E-09
NNE	2.7E-09	2.7E-09	1.3E-09	1.6E-09	1.9E-09	2.4E-09	2.4E-09

Direction	Distance (m) 1386	1413	1513	1496	1432	1266	1240
N	1.6E-09	1.5E-09	1.4E-09	1.4E-09	1.5E-09	1.7E-09	1.8E-09
NNW	1.0E-09	9.9E-10	9.1E-10	9.2E-10	9.7E-10	1.1E-09	1.2E-09
NW	1.0E-09	1.0E-09	9.3E-10	9.4E-10	1.0E-09	1.2E-09	1.2E-09
WNW	1.1E-09	1.1E-09	1.0E-09	1.0E-09	1.1E-09	1.2E-09	1.3E-09
W	1.8E-09	1.8E-09	1.6E-09	1.6E-09	1.7E-09	2.0E-09	2.1E-09
WSW	1.8E-09	1.8E-09	1.6E-09	1.6E-09	1.7E-09	2.1E-09	2.1E-09
SW	1.0E-09	9.9E-10	9.0E-10	9.1E-10	9.7E-10	1.1E-09	1.2E-09
SSW	8.8E-10	8.5E-10	7.8E-10	7.9E-10	8.4E-10	9.8E-10	1.0E-09
S	1.1E-09	1.0E-09	9.4E-10	9.6E-10	1.0E-09	1.2E-09	1.2E-09
SSE	2.1E-09	2.1E-09	1.9E-09	1.9E-09	2.0E-09	2.3E-09	2.4E-09
SE	3.4E-09	3.3E-09	3.1E-09	3.1E-09	3.3E-09	3.7E-09	3.7E-09
ESE	3.6E-09	3.5E-09	3.3E-09	3.3E-09	3.5E-09	3.9E-09	4.0E-09
E	4.3E-09	4.2E-09	3.9E-09	3.9E-09	4.1E-09	4.7E-09	4.8E-09
ENE	4.2E-09	4.1E-09	3.8E-09	3.9E-09	4.1E-09	4.7E-09	4.9E-09
NE	3.7E-09	3.6E-09	3.3E-09	3.3E-09	3.5E-09	4.1E-09	4.2E-09
NNE	2.3E-09	2.2E-09	2.0E-09	2.1E-09	2.2E-09	2.6E-09	2.6E-09

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INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1752	1203	871	854	1428	1485
N	1.1E-09	1.9E-09	2.7E-09	2.7E-09	1.5E-09	1.4E-09
NNW	7.5E-10	1.2E-09	1.8E-09	1.8E-09	9.8E-10	9.3E-10
NW	7.6E-10	1.2E-09	1.8E-09	1.8E-09	1.0E-09	9.5E-10
WNW	8.4E-10	1.3E-09	1.8E-09	1.9E-09	1.1E-09	1.0E-09
W	1.3E-09	2.1E-09	3.0E-09	3.1E-09	1.7E-09	1.7E-09
WSW	1.3E-09	2.2E-09	3.5E-09	3.6E-09	1.7E-09	1.6E-09
SW	7.3E-10	1.2E-09	1.9E-09	1.9E-09	9.8E-10	9.2E-10
SSW	6.4E-10	1.0E-09	1.6E-09	1.6E-09	8.4E-10	8.0E-10
S	7.8E-10	1.2E-09	1.8E-09	1.8E-09	1.0E-09	9.7E-10
SSE	1.6E-09	2.4E-09	3.2E-09	3.2E-09	2.0E-09	1.9E-09
SE	2.6E-09	3.8E-09	4.9E-09	4.9E-09	3.3E-09	3.1E-09
ESE	2.8E-09	4.1E-09	5.2E-09	5.2E-09	3.5E-09	3.3E-09
E	3.2E-09	5.0E-09	6.8E-09	6.9E-09	4.1E-09	3.9E-09
ENE	3.1E-09	5.0E-09	7.3E-09	7.4E-09	4.1E-09	3.9E-09
NE	2.7E-09	4.4E-09	6.4E-09	6.5E-09	3.5E-09	3.4E-09
NNE	1.7E-09	2.7E-09	4.1E-09	4.2E-09	2.2E-09	2.1E-09

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C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Apr 16, 1998 12:09 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent (mrem/year)
4.05E-04

At This Location: 1163 Meters East Northeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Plant 6 - Stack Emissions [G2]

Dataset Name: 97-Z022-VENT-G2
Dataset Date: Apr 16, 1998 12:07 am
Wind File: WNDFILES\97STAR.WND

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MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 1163 Meters East Northeast
Lifetime Fatal Cancer Risk: 5.24E-09

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	7.71E-07
BREAST	8.71E-07
R MAR	4.40E-05
LUNGS	3.14E-03
THYROID	7.53E-07
ENDOST	5.72E-04
RMNDR	1.88E-05
EFFEC	4.05E-04

RADIONUCLIDE EMISSIONS DURING THE YEAR 1997

Nuclide	Class	Size	Source #1 Ci/y	Source #2 Ci/y	Source #3 Ci/y	TOTAL Ci/y
U-234	Y	0.30	1.8E-07	1.8E-07	1.7E-07	5.4E-07
U-235	Y	1.00	9.6E-09	9.6E-09	9.2E-09	2.8E-08
U-236	Y	1.00	7.0E-09	7.0E-09	6.8E-09	2.1E-08
U-238	Y	0.30	2.0E-07	2.0E-07	1.9E-07	6.0E-07
RA-226	W	0.30	1.3E-10	1.3E-10	1.2E-10	3.8E-10
RA-228	W	0.30	5.1E-10	5.1E-10	5.0E-10	1.5E-09
TH-228	Y	0.30	5.4E-09	5.4E-09	5.2E-09	1.6E-08
TH-230	Y	0.30	1.6E-08	1.6E-08	1.5E-08	4.7E-08
TH-232	Y	0.30	8.5E-10	8.5E-10	8.2E-10	2.5E-09
TH-234	Y	0.30	8.0E-07	8.0E-07	7.7E-07	2.4E-06

SITE INFORMATION

Temperature: 11 degrees C
Precipitation: 102 cm/y
Mixing Height: 950 m

SOURCE INFORMATION

Source Number:	1	2	3
Stack Height (m):	8.00	8.00	1.00
Diameter (m):	0.30	0.30	0.15
Plume Rise Momentum (m/s): (Exit Velocity)	9.44E-01	9.44E-01	2.59E+01

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

1163	1595	2340	1543	2221	2630	2078	1707	1258	1950
2017	1781	2690	1864	2115	2209	2168	2164	2196	1616

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Apr 16, 1998 12:09 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Plant 6 - Stack Emissions [G2]

Dataset Name: 97-Z022-VENT-G2
Dataset Date: Apr 16, 1998 12:07 am
Wind File: WNDFILES\97STAR.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	7.71E-07
BREAST	8.71E-07
R MAR	4.40E-05
LUNGS	3.14E-03
THYROID	7.53E-07
ENDOST	5.72E-04
RMNDR	1.88E-05
EFFEC	4.05E-04

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	1.32E-05
INHALATION	3.92E-04
AIR IMMERSION	1.93E-11
GROUND SURFACE	1.42E-07
INTERNAL	4.05E-04
EXTERNAL	1.42E-07
TOTAL	4.05E-04

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NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	1.78E-04
U-235	5.29E-06
U-236	3.87E-06
U-238	1.77E-04
RA-226	1.28E-08
RA-228	1.86E-08
TH-228	9.91E-06
TH-230	2.84E-05
TH-232	2.20E-06
TH-234	3.29E-07
TOTAL	4.05E-04

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	4.14E-11
BONE	2.74E-11
THYROID	1.69E-13
BREAST	1.89E-12
LUNG	5.13E-09
STOMACH	1.28E-12
BOWEL	3.29E-12
LIVER	1.83E-12
PANCREAS	7.50E-13
URINARY	3.89E-11
OTHER	9.17E-13
TOTAL	5.24E-09

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	7.00E-11
INHALATION	5.17E-09
AIR IMMERSION	4.30E-16
GROUND SURFACE	3.27E-12
INTERNAL	5.24E-09
EXTERNAL	3.27E-12
TOTAL	5.24E-09

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	2.33E-09
U-235	6.94E-11
U-236	4.98E-11
U-238	2.33E-09
RA-226	2.09E-13
RA-228	2.20E-13
TH-228	2.00E-10
TH-230	2.38E-10
TH-232	1.25E-11
TH-234	1.34E-11
TOTAL	5.24E-09

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	1163	1595	2340	1543	2221	2630	2078
N	1.5E-04	1.0E-04	5.9E-05	1.1E-04	6.4E-05	5.0E-05	7.0E-05
NNW	9.8E-05	6.6E-05	3.9E-05	6.9E-05	4.2E-05	3.3E-05	4.6E-05
NW	1.0E-04	6.7E-05	4.0E-05	7.0E-05	4.3E-05	3.3E-05	4.7E-05
WNW	1.1E-04	7.3E-05	4.4E-05	7.6E-05	4.7E-05	3.7E-05	5.2E-05
W	1.7E-04	1.2E-04	7.0E-05	1.2E-04	7.5E-05	5.9E-05	8.2E-05
WSW	1.8E-04	1.1E-04	6.4E-05	1.2E-04	6.9E-05	5.3E-05	7.7E-05
SW	1.0E-04	6.5E-05	3.7E-05	6.8E-05	4.0E-05	3.1E-05	4.5E-05
SSW	8.5E-05	5.7E-05	3.3E-05	5.9E-05	3.6E-05	2.8E-05	3.9E-05
S	1.0E-04	6.9E-05	4.1E-05	7.2E-05	4.4E-05	3.5E-05	4.8E-05
SSE	1.9E-04	1.4E-04	8.5E-05	1.4E-04	9.1E-05	7.2E-05	9.9E-05
SE	3.1E-04	2.2E-04	1.4E-04	2.3E-04	1.5E-04	1.2E-04	1.6E-04
ESE	3.2E-04	2.4E-04	1.5E-04	2.5E-04	1.6E-04	1.2E-04	1.7E-04
E	4.0E-04	2.8E-04	1.7E-04	2.9E-04	1.8E-04	1.4E-04	2.0E-04
ENE	4.1E-04	2.7E-04	1.6E-04	2.9E-04	1.7E-04	1.3E-04	1.9E-04
NE	3.5E-04	2.4E-04	1.4E-04	2.5E-04	1.5E-04	1.2E-04	1.6E-04
NNE	2.2E-04	1.5E-04	8.5E-05	1.5E-04	9.2E-05	7.1E-05	1.0E-04

	Distance (m)						
Direction	1707	1258	1950	2017	1781	2690	1864
N	9.2E-05	1.4E-04	7.7E-05	7.3E-05	8.7E-05	4.8E-05	8.2E-05
NNW	6.0E-05	8.9E-05	5.0E-05	4.8E-05	5.7E-05	3.2E-05	5.3E-05
NW	6.2E-05	9.1E-05	5.1E-05	4.9E-05	5.8E-05	3.2E-05	5.5E-05
WNW	6.7E-05	9.7E-05	5.6E-05	5.4E-05	6.4E-05	3.6E-05	6.0E-05
W	1.1E-04	1.6E-04	9.0E-05	8.6E-05	1.0E-04	5.7E-05	9.6E-05
WSW	1.0E-04	1.6E-04	8.4E-05	8.0E-05	9.7E-05	5.2E-05	9.0E-05
SW	5.9E-05	9.0E-05	4.9E-05	4.6E-05	5.6E-05	3.0E-05	5.2E-05
SSW	5.2E-05	7.7E-05	4.3E-05	4.1E-05	4.9E-05	2.7E-05	4.6E-05
S	6.3E-05	9.1E-05	5.3E-05	5.0E-05	6.0E-05	3.4E-05	5.6E-05
SSE	1.3E-04	1.8E-04	1.1E-04	1.0E-04	1.2E-04	6.9E-05	1.1E-04
SE	2.1E-04	2.9E-04	1.8E-04	1.7E-04	2.0E-04	1.1E-04	1.9E-04
ESE	2.2E-04	3.0E-04	1.9E-04	1.8E-04	2.1E-04	1.2E-04	2.0E-04
E	2.6E-04	3.7E-04	2.2E-04	2.1E-04	2.4E-04	1.4E-04	2.3E-04
ENE	2.5E-04	3.7E-04	2.1E-04	2.0E-04	2.4E-04	1.3E-04	2.2E-04
NE	2.2E-04	3.2E-04	1.8E-04	1.7E-04	2.0E-04	1.1E-04	1.9E-04
NNE	1.3E-04	2.0E-04	1.1E-04	1.1E-04	1.3E-04	6.9E-05	1.2E-04

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INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	2115	2209	2168	2164	2196	1616
N	6.9E-05	6.5E-05	6.6E-05	6.6E-05	6.5E-05	9.9E-05
NNW	4.5E-05	4.2E-05	4.3E-05	4.3E-05	4.2E-05	6.5E-05
NW	4.6E-05	4.3E-05	4.4E-05	4.4E-05	4.3E-05	6.6E-05
WNW	5.1E-05	4.8E-05	4.9E-05	4.9E-05	4.8E-05	7.2E-05
W	8.0E-05	7.6E-05	7.8E-05	7.8E-05	7.6E-05	1.2E-04
WSW	7.5E-05	7.0E-05	7.2E-05	7.2E-05	7.1E-05	1.1E-04
SW	4.3E-05	4.1E-05	4.2E-05	4.2E-05	4.1E-05	6.4E-05
SSW	3.8E-05	3.6E-05	3.7E-05	3.7E-05	3.6E-05	5.6E-05
S	4.7E-05	4.5E-05	4.6E-05	4.6E-05	4.5E-05	6.8E-05
SSE	9.7E-05	9.2E-05	9.4E-05	9.4E-05	9.2E-05	1.4E-04
SE	1.6E-04	1.5E-04	1.5E-04	1.5E-04	1.5E-04	2.2E-04
ESE	1.7E-04	1.6E-04	1.6E-04	1.6E-04	1.6E-04	2.3E-04
E	1.9E-04	1.8E-04	1.9E-04	1.9E-04	1.8E-04	2.8E-04
ENE	1.9E-04	1.7E-04	1.8E-04	1.8E-04	1.8E-04	2.7E-04
NE	1.6E-04	1.5E-04	1.5E-04	1.5E-04	1.5E-04	2.3E-04
NNE	9.9E-05	9.3E-05	9.5E-05	9.5E-05	9.3E-05	1.4E-04

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m) 1163	1595	2340	1543	2221	2630	2078
N	1.9E-09	1.3E-09	7.6E-10	1.4E-09	8.2E-10	6.4E-10	9.0E-10
NNW	1.3E-09	8.4E-10	4.9E-10	8.8E-10	5.3E-10	4.1E-10	5.8E-10
NW	1.3E-09	8.6E-10	5.0E-10	9.0E-10	5.4E-10	4.2E-10	5.9E-10
WNW	1.4E-09	9.4E-10	5.6E-10	9.8E-10	6.0E-10	4.7E-10	6.6E-10
W	2.2E-09	1.5E-09	8.9E-10	1.6E-09	9.6E-10	7.5E-10	1.1E-09
WSW	2.3E-09	1.5E-09	8.2E-10	1.5E-09	8.9E-10	6.8E-10	9.8E-10
SW	1.3E-09	8.3E-10	4.7E-10	8.7E-10	5.1E-10	3.9E-10	5.6E-10
SSW	1.1E-09	7.2E-10	4.2E-10	7.6E-10	4.5E-10	3.5E-10	5.0E-10
S	1.3E-09	8.8E-10	5.2E-10	9.2E-10	5.6E-10	4.4E-10	6.1E-10
SSE	2.5E-09	1.8E-09	1.1E-09	1.9E-09	1.2E-09	9.2E-10	1.3E-09
SE	4.0E-09	2.9E-09	1.8E-09	3.0E-09	1.9E-09	1.5E-09	2.1E-09
ESE	4.2E-09	3.1E-09	1.9E-09	3.2E-09	2.0E-09	1.6E-09	2.2E-09
E	5.2E-09	3.6E-09	2.2E-09	3.8E-09	2.3E-09	1.8E-09	2.6E-09
ENE	5.2E-09	3.5E-09	2.1E-09	3.7E-09	2.2E-09	1.7E-09	2.4E-09
NE	4.5E-09	3.1E-09	1.8E-09	3.2E-09	1.9E-09	1.5E-09	2.1E-09
NNE	2.9E-09	1.9E-09	1.1E-09	2.0E-09	1.2E-09	9.1E-10	1.3E-09

Direction	Distance (m) 1707	1258	1950	2017	1781	2690	1864
N	1.2E-09	1.8E-09	9.8E-10	9.4E-10	1.1E-09	6.1E-10	1.1E-09
NNW	7.7E-10	1.1E-09	6.4E-10	6.1E-10	7.2E-10	4.0E-10	6.8E-10
NW	7.9E-10	1.2E-09	6.5E-10	6.2E-10	7.4E-10	4.0E-10	6.9E-10
WNW	8.6E-10	1.2E-09	7.2E-10	6.9E-10	8.1E-10	4.5E-10	7.7E-10
W	1.4E-09	2.0E-09	1.2E-09	1.1E-09	1.3E-09	7.2E-10	1.2E-09
WSW	1.3E-09	2.1E-09	1.1E-09	1.0E-09	1.2E-09	6.6E-10	1.2E-09
SW	7.5E-10	1.2E-09	6.2E-10	5.9E-10	7.1E-10	3.8E-10	6.6E-10
SSW	6.6E-10	9.9E-10	5.4E-10	5.2E-10	6.2E-10	3.4E-10	5.8E-10
S	8.1E-10	1.2E-09	6.7E-10	6.4E-10	7.6E-10	4.2E-10	7.2E-10
SSE	1.7E-09	2.3E-09	1.4E-09	1.3E-09	1.6E-09	8.9E-10	1.5E-09
SE	2.7E-09	3.7E-09	2.3E-09	2.2E-09	2.5E-09	1.5E-09	2.4E-09
ESE	2.8E-09	3.9E-09	2.4E-09	2.3E-09	2.7E-09	1.5E-09	2.6E-09
E	3.3E-09	4.8E-09	2.8E-09	2.7E-09	3.1E-09	1.8E-09	3.0E-09
ENE	3.2E-09	4.8E-09	2.7E-09	2.6E-09	3.1E-09	1.7E-09	2.9E-09
NE	2.8E-09	4.1E-09	2.3E-09	2.2E-09	2.6E-09	1.4E-09	2.5E-09
NNE	1.7E-09	2.6E-09	1.4E-09	1.4E-09	1.6E-09	8.8E-10	1.5E-09

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INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	2115	2209	2168	2164	2196	1616
N	8.8E-10	8.3E-10	8.5E-10	8.5E-10	8.3E-10	1.3E-09
NNW	5.7E-10	5.3E-10	5.5E-10	5.5E-10	5.4E-10	8.3E-10
NW	5.8E-10	5.4E-10	5.6E-10	5.6E-10	5.5E-10	8.5E-10
WNW	6.4E-10	6.0E-10	6.2E-10	6.2E-10	6.1E-10	9.2E-10
W	1.0E-09	9.7E-10	9.9E-10	1.0E-09	9.7E-10	1.5E-09
WSW	9.5E-10	8.9E-10	9.2E-10	9.2E-10	9.0E-10	1.4E-09
SW	5.5E-10	5.2E-10	5.3E-10	5.3E-10	5.2E-10	8.2E-10
SSW	4.8E-10	4.6E-10	4.7E-10	4.7E-10	4.6E-10	7.1E-10
S	6.0E-10	5.6E-10	5.8E-10	5.8E-10	5.7E-10	8.6E-10
SSE	1.2E-09	1.2E-09	1.2E-09	1.2E-09	1.2E-09	1.8E-09
SE	2.0E-09	1.9E-09	2.0E-09	2.0E-09	1.9E-09	2.9E-09
ESE	2.2E-09	2.0E-09	2.1E-09	2.1E-09	2.1E-09	3.0E-09
E	2.5E-09	2.3E-09	2.4E-09	2.4E-09	2.4E-09	3.6E-09
ENE	2.4E-09	2.2E-09	2.3E-09	2.3E-09	2.3E-09	3.5E-09
NE	2.1E-09	1.9E-09	2.0E-09	2.0E-09	1.9E-09	3.0E-09
NNE	1.3E-09	1.2E-09	1.2E-09	1.2E-09	1.2E-09	1.9E-09

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Apr 7, 1998 3:45 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent (mrem/year)
4.36E-05

At This Location: 969 Meters East Northeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1977

Comments: 1997 NESHAP Demonstration
Plant 8 Oliver Filter [G1]

Dataset Name: 97-P239-G1
Dataset Date: Apr 7, 1998 12:24 am
Wind File: WNDFILES\97STAR.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 969 Meters East Northeast
Lifetime Fatal Cancer Risk: 5.68E-10

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	1.47E-07
BREAST	1.67E-07
R MAR	3.59E-06
LUNGS	3.37E-04
THYROID	1.43E-07
ENDOST	4.97E-05
RMNDR	4.05E-06
EFFEC	4.36E-05

RADIONUCLIDE EMISSIONS DURING THE YEAR 1977

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	1.00	1.4E-07	1.4E-07
U-235	Y	1.00	7.7E-09	7.7E-09
U-236	Y	1.00	5.3E-09	5.3E-09
U-238	Y	1.00	1.9E-07	1.9E-07
RA-226	W	1.00	1.3E-10	1.3E-10
RA-228	W	1.00	5.2E-10	5.2E-10
TH-228	Y	1.00	5.5E-09	5.5E-09
TH-230	Y	1.00	3.8E-10	3.8E-10
TH-232	Y	1.00	8.6E-10	8.6E-10
TH-234	Y	1.00	8.0E-07	8.0E-07

SITE INFORMATION

Temperature: 11 degrees C
Precipitation: 102 cm/y
Mixing Height: 950 m

SOURCE INFORMATION

Source Number:	1
Stack Height (m):	13.72
Diameter (m):	0.25
Plume Rise Momentum (m/s): (Exit Velocity)	1.12E+01

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

1252	1207	1926	1561	1265	969	1070	1137	1171	1312
1308	1318	1238	1236	1850	1382	1190	1186	1731	1695

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Apr 7, 1998 3:45 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1977

Comments: 1997 NESHAP Demonstration
Plant 8 Oliver Filter [G1]

Dataset Name: 97-P239-G1
Dataset Date: Apr 7, 1998 12:24 am
Wind File: WNDFILES\97STAR.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	1.47E-07
BREAST	1.67E-07
R MAR	3.59E-06
LUNGS	3.37E-04
THYROID	1.43E-07
ENDOST	4.97E-05
RMNDR	4.05E-06
EFFEC	4.36E-05

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	2.89E-06
INHALATION	4.07E-05
AIR IMMERSION	4.07E-12
GROUND SURFACE	2.88E-08
INTERNAL	4.36E-05
EXTERNAL	2.88E-08
TOTAL	4.36E-05

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NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	1.85E-05
U-235	9.45E-07
U-236	6.42E-07
U-238	2.18E-05
RA-226	2.39E-09
RA-228	3.91E-09
TH-228	1.27E-06
TH-230	8.91E-08
TH-232	2.86E-07
TH-234	6.47E-08
TOTAL	4.36E-05

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	4.03E-12
BONE	2.64E-12
THYROID	3.29E-14
BREAST	3.74E-13
LUNG	5.51E-10
STOMACH	2.57E-13
BOWEL	7.49E-13
LIVER	2.33E-13
PANCREAS	1.45E-13
URINARY	8.46E-12
OTHER	1.77E-13
TOTAL	5.68E-10

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	1.55E-11
INHALATION	5.52E-10
AIR IMMERSION	9.05E-17
GROUND SURFACE	6.61E-13
INTERNAL	5.68E-10
EXTERNAL	6.61E-13
TOTAL	5.68E-10

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	2.36E-10
U-235	1.24E-11
U-236	8.21E-12
U-238	2.82E-10
RA-226	3.03E-14
RA-228	3.89E-14
TH-228	2.55E-11
TH-230	7.30E-13
TH-232	1.61E-12
TH-234	1.96E-12
TOTAL	5.68E-10

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	1252	1207	1926	1561	1265	969	1070
N	1.3E-05	1.3E-05	7.5E-06	9.6E-06	1.2E-05	1.7E-05	1.5E-05
NNW	8.7E-06	9.1E-06	5.2E-06	6.6E-06	8.6E-06	1.2E-05	1.1E-05
NW	8.5E-06	8.9E-06	5.1E-06	6.6E-06	8.4E-06	1.1E-05	1.0E-05
WNW	8.2E-06	8.5E-06	5.0E-06	6.3E-06	8.1E-06	1.1E-05	9.8E-06
W	1.4E-05	1.5E-05	8.2E-06	1.0E-05	1.4E-05	1.9E-05	1.7E-05
WSW	1.9E-05	2.0E-05	1.0E-05	1.4E-05	1.9E-05	2.7E-05	2.3E-05
SW	1.0E-05	1.1E-05	5.8E-06	7.7E-06	1.0E-05	1.5E-05	1.3E-05
SSW	7.9E-06	8.3E-06	4.6E-06	6.0E-06	7.8E-06	1.1E-05	9.8E-06
S	8.4E-06	8.8E-06	5.0E-06	6.4E-06	8.3E-06	1.2E-05	1.0E-05
SSE	1.2E-05	1.3E-05	7.8E-06	9.6E-06	1.2E-05	1.6E-05	1.5E-05
SE	1.7E-05	1.8E-05	1.1E-05	1.4E-05	1.7E-05	2.3E-05	2.1E-05
ESE	1.9E-05	2.0E-05	1.2E-05	1.5E-05	1.9E-05	2.6E-05	2.3E-05
E	2.8E-05	2.9E-05	1.7E-05	2.2E-05	2.8E-05	3.8E-05	3.4E-05
ENE	3.2E-05	3.4E-05	1.9E-05	2.5E-05	3.2E-05	4.4E-05	3.9E-05
NE	2.9E-05	3.1E-05	1.7E-05	2.2E-05	2.9E-05	4.0E-05	3.6E-05
NNE	2.0E-05	2.1E-05	1.2E-05	1.5E-05	2.0E-05	2.8E-05	2.5E-05

	Distance (m)						
Direction	1137	1171	1312	1308	1318	1238	1236
N	1.4E-05	1.4E-05	1.2E-05	1.2E-05	1.2E-05	1.3E-05	1.3E-05
NNW	9.8E-06	9.4E-06	8.2E-06	8.2E-06	8.2E-06	8.8E-06	8.8E-06
NW	9.5E-06	9.2E-06	8.0E-06	8.1E-06	8.0E-06	8.6E-06	8.6E-06
WNW	9.1E-06	8.8E-06	7.7E-06	7.8E-06	7.7E-06	8.3E-06	8.3E-06
W	1.6E-05	1.5E-05	1.3E-05	1.3E-05	1.3E-05	1.4E-05	1.4E-05
WSW	2.2E-05	2.1E-05	1.8E-05	1.8E-05	1.8E-05	1.9E-05	1.9E-05
SW	1.2E-05	1.1E-05	9.8E-06	9.8E-06	9.7E-06	1.1E-05	1.1E-05
SSW	9.0E-06	8.7E-06	7.5E-06	7.5E-06	7.4E-06	8.1E-06	8.1E-06
S	9.5E-06	9.1E-06	7.9E-06	7.9E-06	7.9E-06	8.5E-06	8.5E-06
SSE	1.4E-05	1.3E-05	1.2E-05	1.2E-05	1.2E-05	1.2E-05	1.3E-05
SE	1.9E-05	1.9E-05	1.6E-05	1.6E-05	1.6E-05	1.7E-05	1.7E-05
ESE	2.1E-05	2.1E-05	1.8E-05	1.8E-05	1.8E-05	1.9E-05	1.9E-05
E	3.1E-05	3.0E-05	2.6E-05	2.7E-05	2.6E-05	2.8E-05	2.8E-05
ENE	3.6E-05	3.5E-05	3.1E-05	3.1E-05	3.1E-05	3.3E-05	3.3E-05
NE	3.3E-05	3.2E-05	2.8E-05	2.8E-05	2.8E-05	3.0E-05	3.0E-05
NNE	2.3E-05	2.2E-05	1.9E-05	1.9E-05	1.9E-05	2.0E-05	2.0E-05

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INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1850	1382	1190	1186	1731	1695
N	7.9E-06	1.1E-05	1.3E-05	1.3E-05	8.5E-06	8.7E-06
NNW	5.4E-06	7.7E-06	9.2E-06	9.3E-06	5.9E-06	6.0E-06
NW	5.4E-06	7.6E-06	9.0E-06	9.0E-06	5.8E-06	6.0E-06
WNW	5.2E-06	7.3E-06	8.7E-06	8.7E-06	5.6E-06	5.8E-06
W	8.6E-06	1.2E-05	1.5E-05	1.5E-05	9.3E-06	9.5E-06
WSW	1.1E-05	1.6E-05	2.0E-05	2.0E-05	1.2E-05	1.2E-05
SW	6.1E-06	9.1E-06	1.1E-05	1.1E-05	6.7E-06	6.9E-06
SSW	4.8E-06	7.0E-06	8.5E-06	8.5E-06	5.3E-06	5.4E-06
S	5.2E-06	7.4E-06	8.9E-06	9.0E-06	5.6E-06	5.8E-06
SSE	8.1E-06	1.1E-05	1.3E-05	1.3E-05	8.7E-06	8.9E-06
SE	1.2E-05	1.5E-05	1.8E-05	1.8E-05	1.2E-05	1.3E-05
ESE	1.3E-05	1.7E-05	2.0E-05	2.0E-05	1.3E-05	1.4E-05
E	1.8E-05	2.5E-05	3.0E-05	3.0E-05	1.9E-05	2.0E-05
ENE	2.0E-05	2.9E-05	3.4E-05	3.5E-05	2.2E-05	2.3E-05
NE	1.8E-05	2.6E-05	3.1E-05	3.2E-05	2.0E-05	2.0E-05
NNE	1.2E-05	1.8E-05	2.1E-05	2.1E-05	1.3E-05	1.4E-05

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	1252	1207	1926	1561	1265	969	1070
N	1.6E-10	1.7E-10	9.5E-11	1.2E-10	1.6E-10	2.2E-10	2.0E-10
NNW	1.1E-10	1.2E-10	6.4E-11	8.4E-11	1.1E-10	1.5E-10	1.3E-10
NW	1.1E-10	1.1E-10	6.4E-11	8.3E-11	1.1E-10	1.5E-10	1.3E-10
WNW	1.0E-10	1.1E-10	6.2E-11	7.9E-11	1.0E-10	1.4E-10	1.3E-10
W	1.8E-10	1.9E-10	1.0E-10	1.3E-10	1.8E-10	2.5E-10	2.2E-10
WSW	2.4E-10	2.6E-10	1.3E-10	1.8E-10	2.4E-10	3.5E-10	3.0E-10
SW	1.3E-10	1.4E-10	7.3E-11	9.8E-11	1.3E-10	1.9E-10	1.7E-10
SSW	1.0E-10	1.1E-10	5.7E-11	7.5E-11	9.9E-11	1.4E-10	1.2E-10
S	1.1E-10	1.1E-10	6.2E-11	8.0E-11	1.1E-10	1.5E-10	1.3E-10
SSE	1.6E-10	1.6E-10	9.9E-11	1.2E-10	1.6E-10	2.1E-10	1.9E-10
SE	2.2E-10	2.3E-10	1.4E-10	1.7E-10	2.2E-10	3.0E-10	2.7E-10
ESE	2.5E-10	2.6E-10	1.5E-10	1.9E-10	2.4E-10	3.4E-10	3.0E-10
E	3.6E-10	3.8E-10	2.2E-10	2.8E-10	3.6E-10	4.9E-10	4.4E-10
ENE	4.2E-10	4.4E-10	2.5E-10	3.2E-10	4.2E-10	5.7E-10	5.1E-10
NE	3.8E-10	4.0E-10	2.2E-10	2.9E-10	3.8E-10	5.2E-10	4.6E-10
NNE	2.6E-10	2.7E-10	1.5E-10	1.9E-10	2.6E-10	3.6E-10	3.2E-10

	Distance (m)						
Direction	1137	1171	1312	1308	1318	1238	1236
N	1.8E-10	1.8E-10	1.5E-10	1.5E-10	1.5E-10	1.6E-10	1.6E-10
NNW	1.2E-10	1.2E-10	1.0E-10	1.0E-10	1.0E-10	1.1E-10	1.1E-10
NW	1.2E-10	1.2E-10	1.0E-10	1.0E-10	1.0E-10	1.1E-10	1.1E-10
WNW	1.2E-10	1.1E-10	9.8E-11	9.8E-11	9.7E-11	1.1E-10	1.1E-10
W	2.0E-10	1.9E-10	1.7E-10	1.7E-10	1.7E-10	1.8E-10	1.8E-10
WSW	2.8E-10	2.7E-10	2.3E-10	2.3E-10	2.3E-10	2.5E-10	2.5E-10
SW	1.5E-10	1.5E-10	1.3E-10	1.3E-10	1.2E-10	1.4E-10	1.4E-10
SSW	1.1E-10	1.1E-10	9.5E-11	9.5E-11	9.4E-11	1.0E-10	1.0E-10
S	1.2E-10	1.2E-10	1.0E-10	1.0E-10	1.0E-10	1.1E-10	1.1E-10
SSE	1.8E-10	1.7E-10	1.5E-10	1.5E-10	1.5E-10	1.6E-10	1.6E-10
SE	2.5E-10	2.4E-10	2.1E-10	2.1E-10	2.1E-10	2.2E-10	2.3E-10
ESE	2.8E-10	2.7E-10	2.3E-10	2.3E-10	2.3E-10	2.5E-10	2.5E-10
E	4.1E-10	3.9E-10	3.4E-10	3.4E-10	3.4E-10	3.7E-10	3.7E-10
ENE	4.7E-10	4.6E-10	4.0E-10	4.0E-10	4.0E-10	4.3E-10	4.3E-10
NE	4.3E-10	4.2E-10	3.6E-10	3.6E-10	3.6E-10	3.9E-10	3.9E-10
NNE	2.9E-10	2.8E-10	2.4E-10	2.4E-10	2.4E-10	2.6E-10	2.6E-10

000089

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1850	1382	1190	1186	1731	1695
N	1.0E-10	1.4E-10	1.7E-10	1.7E-10	1.1E-10	1.1E-10
NNW	6.8E-11	9.7E-11	1.2E-10	1.2E-10	7.3E-11	7.5E-11
NW	6.7E-11	9.6E-11	1.1E-10	1.2E-10	7.3E-11	7.5E-11
WNW	6.5E-11	9.2E-11	1.1E-10	1.1E-10	7.0E-11	7.2E-11
W	1.1E-10	1.6E-10	1.9E-10	1.9E-10	1.2E-10	1.2E-10
WSW	1.4E-10	2.1E-10	2.6E-10	2.6E-10	1.6E-10	1.6E-10
SW	7.7E-11	1.2E-10	1.4E-10	1.4E-10	8.4E-11	8.7E-11
SSW	6.0E-11	8.8E-11	1.1E-10	1.1E-10	6.5E-11	6.7E-11
S	6.5E-11	9.4E-11	1.1E-10	1.1E-10	7.0E-11	7.2E-11
SSE	1.0E-10	1.4E-10	1.7E-10	1.7E-10	1.1E-10	1.1E-10
SE	1.5E-10	2.0E-10	2.4E-10	2.4E-10	1.6E-10	1.6E-10
ESE	1.6E-10	2.2E-10	2.6E-10	2.6E-10	1.7E-10	1.7E-10
E	2.3E-10	3.2E-10	3.9E-10	3.9E-10	2.5E-10	2.5E-10
ENE	2.6E-10	3.7E-10	4.5E-10	4.5E-10	2.8E-10	2.9E-10
NE	2.3E-10	3.4E-10	4.1E-10	4.1E-10	2.5E-10	2.6E-10
NNE	1.6E-10	2.3E-10	2.8E-10	2.8E-10	1.7E-10	1.7E-10

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Apr 7, 1998 3:46 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

3.19E-05

At This Location: 1265 Meters East Northeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Plant 8 Oliver Filter [G2]

Dataset Name: 97-P239-G2
Dataset Date: Apr 7, 1998 12:25 am
Wind File: WNDFILES\97STAR.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 1265 Meters East Northeast
Lifetime Fatal Cancer Risk: 4.16E-10

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	1.07E-07
BREAST	1.22E-07
R MAR	2.61E-06
LUNGS	2.46E-04
THYROID	1.04E-07
ENDOST	3.61E-05
RMNDR	2.95E-06
EFFEC	3.19E-05

RADIONUCLIDE EMISSIONS DURING THE YEAR 1997

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	1.00	1.4E-07	1.4E-07
U-235	Y	1.00	7.7E-09	7.7E-09
U-236	Y	1.00	5.3E-09	5.3E-09
U-238	Y	1.00	1.9E-07	1.9E-07
RA-226	W	1.00	1.3E-10	1.3E-10
RA-228	W	1.00	5.2E-10	5.2E-10
TH-228	Y	1.00	5.5E-09	5.5E-09
TH-230	Y	1.00	3.8E-10	3.8E-10
TH-232	Y	1.00	8.6E-10	8.6E-10
TH-234	Y	1.00	8.0E-07	8.0E-07

SITE INFORMATION

Temperature:	11 degrees C
Precipitation:	102 cm/y
Mixing Height:	950 m

SOURCE INFORMATION

Source Number:	1
Stack Height (m):	13.72
Diameter (m):	0.25
Plume Rise Momentum (m/s): (Exit Velocity)	1.12E+01

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

1265	1537	2001	1897	2573	2273	2298	1631	1468	2305
2372	1699	2333	1596	1913	2005	1958	1839	1870	1809

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Apr 7, 1998 3:46 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Plant 8 Oliver Filter [G2]

Dataset Name: 97-P239-G2
Dataset Date: Apr 7, 1998 12:25 am
Wind File: WNDFILES\97STAR.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	1.07E-07
BREAST	1.22E-07
R MAR	2.61E-06
LUNGS	2.46E-04
THYROID	1.04E-07
ENDOST	3.61E-05
RMNDR	2.95E-06
EFFEC	3.19E-05

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	2.10E-06
INHALATION	2.98E-05
AIR IMMERSION	2.98E-12
GROUND SURFACE	2.12E-08
INTERNAL	3.19E-05
EXTERNAL	2.12E-08
TOTAL	3.19E-05

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	1.35E-05
U-235	6.91E-07
U-236	4.69E-07
U-238	1.60E-05
RA-226	1.74E-09
RA-228	2.85E-09
TH-228	9.30E-07
TH-230	6.52E-08
TH-232	2.09E-07
TH-234	4.72E-08
TOTAL	3.19E-05

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	2.93E-12
BONE	1.92E-12
THYROID	2.40E-14
BREAST	2.74E-13
LUNG	4.03E-10
STOMACH	1.87E-13
BOWEL	5.45E-13
LIVER	1.71E-13
PANCREAS	1.06E-13
URINARY	6.14E-12
OTHER	1.29E-13
TOTAL	4.16E-10

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	1.13E-11
INHALATION	4.04E-10
AIR IMMERSION	6.62E-17
GROUND SURFACE	4.88E-13
INTERNAL	4.15E-10
EXTERNAL	4.88E-13
TOTAL	4.16E-10

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	1.73E-10
U-235	9.04E-12
U-236	6.00E-12
U-238	2.06E-10
RA-226	2.22E-14
RA-228	2.83E-14
TH-228	1.86E-11
TH-230	5.34E-13
TH-232	1.18E-12
TH-234	1.43E-12
TOTAL	4.16E-10

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	1265	1537	2001	1897	2573	2273	2298
N	1.2E-05	9.7E-06	7.0E-06	7.5E-06	5.3E-06	6.1E-06	6.0E-06
NNW	8.4E-06	6.6E-06	4.8E-06	5.1E-06	3.6E-06	4.1E-06	4.1E-06
NW	8.2E-06	6.5E-06	4.8E-06	5.1E-06	3.6E-06	4.2E-06	4.1E-06
WNW	7.9E-06	6.3E-06	4.7E-06	5.0E-06	3.6E-06	4.1E-06	4.1E-06
W	1.4E-05	1.1E-05	7.7E-06	8.2E-06	5.9E-06	6.7E-06	6.6E-06
WSW	1.8E-05	1.4E-05	9.8E-06	1.1E-05	7.0E-06	8.3E-06	8.1E-06
SW	1.0E-05	7.7E-06	5.4E-06	5.8E-06	3.9E-06	4.6E-06	4.5E-06
SSW	7.7E-06	6.0E-06	4.3E-06	4.6E-06	3.2E-06	3.7E-06	3.6E-06
S	8.1E-06	6.4E-06	4.6E-06	4.9E-06	3.5E-06	4.0E-06	4.0E-06
SSE	1.2E-05	9.7E-06	7.4E-06	7.8E-06	6.0E-06	6.6E-06	6.6E-06
SE	1.7E-05	1.4E-05	1.1E-05	1.1E-05	8.9E-06	9.7E-06	9.6E-06
ESE	1.9E-05	1.5E-05	1.2E-05	1.2E-05	9.5E-06	1.0E-05	1.0E-05
E	2.8E-05	2.2E-05	1.6E-05	1.7E-05	1.3E-05	1.4E-05	1.4E-05
ENE	3.2E-05	2.5E-05	1.8E-05	2.0E-05	1.4E-05	1.6E-05	1.6E-05
NE	2.9E-05	2.3E-05	1.6E-05	1.7E-05	1.2E-05	1.4E-05	1.4E-05
NNE	2.0E-05	1.5E-05	1.1E-05	1.2E-05	8.0E-06	9.3E-06	9.2E-06

	Distance (m)						
Direction	1631	1468	2305	2372	1699	2333	1596
N	9.0E-06	1.0E-05	6.0E-06	5.8E-06	8.5E-06	5.9E-06	9.2E-06
NNW	6.1E-06	7.0E-06	4.1E-06	4.0E-06	5.8E-06	4.0E-06	6.3E-06
NW	6.1E-06	6.9E-06	4.1E-06	4.0E-06	5.8E-06	4.0E-06	6.2E-06
WNW	5.9E-06	6.6E-06	4.1E-06	3.9E-06	5.6E-06	4.0E-06	6.0E-06
W	9.8E-06	1.1E-05	6.6E-06	6.4E-06	9.3E-06	6.5E-06	1.0E-05
WSW	1.3E-05	1.5E-05	8.1E-06	7.8E-06	1.2E-05	8.0E-06	1.3E-05
SW	7.1E-06	8.2E-06	4.5E-06	4.3E-06	6.7E-06	4.4E-06	7.3E-06
SSW	5.5E-06	6.3E-06	3.6E-06	3.5E-06	5.2E-06	3.6E-06	5.7E-06
S	5.9E-06	6.7E-06	4.0E-06	3.9E-06	5.6E-06	3.9E-06	6.1E-06
SSE	9.1E-06	1.0E-05	6.6E-06	6.4E-06	8.7E-06	6.5E-06	9.3E-06
SE	1.3E-05	1.4E-05	9.6E-06	9.4E-06	1.2E-05	9.5E-06	1.3E-05
ESE	1.4E-05	1.6E-05	1.0E-05	1.0E-05	1.3E-05	1.0E-05	1.4E-05
E	2.0E-05	2.3E-05	1.4E-05	1.4E-05	1.9E-05	1.4E-05	2.1E-05
ENE	2.3E-05	2.7E-05	1.6E-05	1.5E-05	2.2E-05	1.5E-05	2.4E-05
NE	2.1E-05	2.4E-05	1.4E-05	1.3E-05	2.0E-05	1.4E-05	2.2E-05
NNE	1.4E-05	1.6E-05	9.1E-06	8.8E-06	1.3E-05	9.0E-06	1.4E-05

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INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1913	2005	1958	1839	1870	1809
N	7.4E-06	7.0E-06	7.2E-06	7.8E-06	7.6E-06	7.9E-06
NNW	5.1E-06	4.8E-06	4.9E-06	5.3E-06	5.2E-06	5.4E-06
NW	5.0E-06	4.8E-06	4.9E-06	5.3E-06	5.2E-06	5.4E-06
WNW	4.9E-06	4.7E-06	4.8E-06	5.1E-06	5.0E-06	5.2E-06
W	8.1E-06	7.7E-06	7.9E-06	8.5E-06	8.3E-06	8.6E-06
WSW	1.0E-05	9.8E-06	1.0E-05	1.1E-05	1.1E-05	1.1E-05
SW	5.7E-06	5.4E-06	5.6E-06	6.0E-06	5.9E-06	6.2E-06
SSW	4.5E-06	4.3E-06	4.4E-06	4.7E-06	4.6E-06	4.8E-06
S	4.9E-06	4.6E-06	4.8E-06	5.1E-06	5.0E-06	5.2E-06
SSE	7.7E-06	7.4E-06	7.6E-06	8.0E-06	7.9E-06	8.2E-06
SE	1.1E-05	1.1E-05	1.1E-05	1.1E-05	1.1E-05	1.2E-05
ESE	1.2E-05	1.2E-05	1.2E-05	1.2E-05	1.2E-05	1.3E-05
E	1.7E-05	1.6E-05	1.7E-05	1.8E-05	1.7E-05	1.8E-05
ENE	1.9E-05	1.8E-05	1.9E-05	2.0E-05	2.0E-05	2.1E-05
NE	1.7E-05	1.6E-05	1.7E-05	1.8E-05	1.8E-05	1.9E-05
NNE	1.1E-05	1.1E-05	1.1E-05	1.2E-05	1.2E-05	1.2E-05

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m) 1265	1537	2001	1897	2573	2273	2298
N	1.6E-10	1.2E-10	9.0E-11	9.6E-11	6.7E-11	7.8E-11	7.7E-11
NNW	1.1E-10	8.4E-11	6.1E-11	6.5E-11	4.5E-11	5.2E-11	5.1E-11
NW	1.1E-10	8.3E-11	6.1E-11	6.5E-11	4.5E-11	5.2E-11	5.2E-11
WNW	1.0E-10	8.0E-11	5.9E-11	6.3E-11	4.6E-11	5.2E-11	5.1E-11
W	1.8E-10	1.4E-10	9.8E-11	1.0E-10	7.4E-11	8.5E-11	8.4E-11
WSW	2.4E-10	1.8E-10	1.3E-10	1.4E-10	8.9E-11	1.1E-10	1.0E-10
SW	1.3E-10	9.9E-11	6.8E-11	7.4E-11	4.9E-11	5.8E-11	5.7E-11
SSW	9.9E-11	7.6E-11	5.4E-11	5.7E-11	4.0E-11	4.6E-11	4.5E-11
S	1.0E-10	8.1E-11	5.9E-11	6.2E-11	4.4E-11	5.1E-11	5.0E-11
SSE	1.6E-10	1.2E-10	9.5E-11	1.0E-10	7.6E-11	8.5E-11	8.4E-11
SE	2.2E-10	1.8E-10	1.4E-10	1.4E-10	1.1E-10	1.2E-10	1.2E-10
ESE	2.4E-10	1.9E-10	1.5E-10	1.6E-10	1.2E-10	1.3E-10	1.3E-10
E	3.6E-10	2.8E-10	2.1E-10	2.2E-10	1.6E-10	1.9E-10	1.8E-10
ENE	4.2E-10	3.3E-10	2.4E-10	2.5E-10	1.8E-10	2.1E-10	2.0E-10
NE	3.8E-10	2.9E-10	2.1E-10	2.3E-10	1.6E-10	1.8E-10	1.8E-10
NNE	2.5E-10	2.0E-10	1.4E-10	1.5E-10	1.0E-10	1.2E-10	1.2E-10

Direction	Distance (m) 1631	1468	2305	2372	1699	2333	1596
N	1.2E-10	1.3E-10	7.6E-11	7.4E-11	1.1E-10	7.5E-11	1.2E-10
NNW	7.8E-11	9.0E-11	5.1E-11	5.0E-11	7.4E-11	5.1E-11	8.0E-11
NW	7.8E-11	8.8E-11	5.1E-11	5.0E-11	7.4E-11	5.1E-11	8.0E-11
WNW	7.5E-11	8.5E-11	5.1E-11	4.9E-11	7.1E-11	5.0E-11	7.7E-11
W	1.3E-10	1.4E-10	8.4E-11	8.1E-11	1.2E-10	8.3E-11	1.3E-10
WSW	1.7E-10	1.9E-10	1.0E-10	1.0E-10	1.6E-10	1.0E-10	1.7E-10
SW	9.1E-11	1.1E-10	5.7E-11	5.5E-11	8.6E-11	5.6E-11	9.4E-11
SSW	7.0E-11	8.1E-11	4.5E-11	4.4E-11	6.6E-11	4.5E-11	7.2E-11
S	7.5E-11	8.6E-11	5.0E-11	4.8E-11	7.1E-11	4.9E-11	7.7E-11
SSE	1.2E-10	1.3E-10	8.4E-11	8.2E-11	1.1E-10	8.3E-11	1.2E-10
SE	1.7E-10	1.8E-10	1.2E-10	1.2E-10	1.6E-10	1.2E-10	1.7E-10
ESE	1.8E-10	2.0E-10	1.3E-10	1.3E-10	1.7E-10	1.3E-10	1.9E-10
E	2.6E-10	3.0E-10	1.8E-10	1.8E-10	2.5E-10	1.8E-10	2.7E-10
ENE	3.0E-10	3.5E-10	2.0E-10	2.0E-10	2.9E-10	2.0E-10	3.1E-10
NE	2.7E-10	3.1E-10	1.8E-10	1.7E-10	2.6E-10	1.8E-10	2.8E-10
NNE	1.8E-10	2.1E-10	1.2E-10	1.1E-10	1.7E-10	1.2E-10	1.9E-10

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INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1913	2005	1958	1839	1870	1809
N	9.5E-11	9.0E-11	9.2E-11	1.0E-10	9.8E-11	1.0E-10
NNW	6.4E-11	6.1E-11	6.2E-11	6.7E-11	6.6E-11	6.9E-11
NW	6.4E-11	6.0E-11	6.2E-11	6.7E-11	6.6E-11	6.8E-11
WNW	6.2E-11	5.9E-11	6.1E-11	6.5E-11	6.4E-11	6.6E-11
W	1.0E-10	9.8E-11	1.0E-10	1.1E-10	1.1E-10	1.1E-10
WSW	1.3E-10	1.3E-10	1.3E-10	1.4E-10	1.4E-10	1.5E-10
SW	7.3E-11	6.8E-11	7.0E-11	7.7E-11	7.5E-11	7.9E-11
SSW	5.7E-11	5.4E-11	5.5E-11	6.0E-11	5.9E-11	6.1E-11
S	6.2E-11	5.8E-11	6.0E-11	6.5E-11	6.3E-11	6.6E-11
SSE	9.9E-11	9.5E-11	9.7E-11	1.0E-10	1.0E-10	1.0E-10
SE	1.4E-10	1.4E-10	1.4E-10	1.5E-10	1.5E-10	1.5E-10
ESE	1.5E-10	1.5E-10	1.5E-10	1.6E-10	1.6E-10	1.6E-10
E	2.2E-10	2.1E-10	2.2E-10	2.3E-10	2.3E-10	2.3E-10
ENE	2.5E-10	2.4E-10	2.4E-10	2.6E-10	2.6E-10	2.7E-10
NE	2.2E-10	2.1E-10	2.2E-10	2.4E-10	2.3E-10	2.4E-10
NNE	1.5E-10	1.4E-10	1.4E-10	1.6E-10	1.5E-10	1.6E-10

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Apr 7, 1998 3:48 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

5.51E-04

At This Location: 947 Meters East Northeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Plant 8 Eimco Filters [G1]

Dataset Name: 97-P240-G1
Dataset Date: Apr 7, 1998 12:29 am
Wind File: WNDFILES\97STAR.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 947 Meters East Northeast
Lifetime Fatal Cancer Risk: 7.18E-09

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	1.84E-06
BREAST	2.10E-06
R MAR	4.51E-05
LUNGS	4.26E-03
THYROID	1.80E-06
ENDOST	6.25E-04
RMNDR	5.09E-05
EFFEC	5.51E-04

RADIONUCLIDE EMISSIONS DURING THE YEAR 1997

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	1.00	1.8E-06	1.8E-06
U-235	Y	1.00	9.4E-08	9.4E-08
U-236	Y	1.00	6.4E-08	6.4E-08
U-238	Y	1.00	2.3E-06	2.3E-06
RA-226	W	1.00	1.6E-09	1.6E-09
RA-228	W	1.00	6.3E-09	6.3E-09
TH-228	Y	1.00	6.7E-08	6.7E-08
TH-230	Y	1.00	4.7E-09	4.7E-09
TH-232	Y	1.00	1.0E-08	1.0E-08
TH-234	Y	1.00	9.8E-06	9.8E-06

SITE INFORMATION

Temperature:	11 degrees C
Precipitation:	102 cm/y
Mixing Height:	950 m

SOURCE INFORMATION

Source Number:	1
Stack Height (m):	13.72
Diameter (m):	0.20
Plume Rise Momentum (m/s): (Exit Velocity)	1.31E+01

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

1255	1207	1913	1543	1245	947	1055	1125	1159	1304
1301	1315	1241	1242	1861	1397	1212	1208	1750	1708

E-1620

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Apr 7, 1998 3:48 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Plant 8 Eimco Filters [G1]

Dataset Name: 97-P240-G1
Dataset Date: Apr 7, 1998 12:29 am
Wind File: WNDFILES\97STAR.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	1.84E-06
BREAST	2.10E-06
R MAR	4.51E-05
LUNGS	4.26E-03
THYROID	1.80E-06
ENDOST	6.25E-04
RMNDR	5.09E-05
EFFEC	5.51E-04

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	3.62E-05
INHALATION	5.15E-04
AIR IMMERSION	5.14E-11
GROUND SURFACE	3.62E-07
INTERNAL	5.51E-04
EXTERNAL	3.62E-07
TOTAL	5.51E-04

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	2.35E-04
U-235	1.19E-05
U-236	8.11E-06
U-238	2.75E-04
RA-226	3.00E-08
RA-228	4.91E-08
TH-228	1.60E-05
TH-230	1.12E-06
TH-232	3.62E-06
TH-234	8.14E-07
TOTAL	5.51E-04

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	5.06E-11
BONE	3.32E-11
THYROID	4.13E-13
BREAST	4.70E-12
LUNG	6.97E-09
STOMACH	3.23E-12
BOWEL	9.40E-12
LIVER	2.94E-12
PANCREAS	1.82E-12
URINARY	1.06E-10
OTHER	2.23E-12
TOTAL	7.18E-09

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	1.95E-10
INHALATION	6.98E-09
AIR IMMERSION	1.14E-15
GROUND SURFACE	8.32E-12
INTERNAL	7.17E-09
EXTERNAL	8.32E-12
TOTAL	7.18E-09

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	3.00E-09
U-235	1.56E-10
U-236	1.04E-10
U-238	3.55E-09
RA-226	3.83E-13
RA-228	4.89E-13
TH-228	3.21E-10
TH-230	9.21E-12
TH-232	2.04E-11
TH-234	2.47E-11
TOTAL	7.18E-09

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	1255	1207	1913	1543	1245	947	1055
N	1.5E-04	1.6E-04	9.3E-05	1.2E-04	1.6E-04	2.2E-04	1.9E-04
NNW	1.1E-04	1.1E-04	6.4E-05	8.3E-05	1.1E-04	1.5E-04	1.3E-04
NW	1.0E-04	1.1E-04	6.4E-05	8.2E-05	1.1E-04	1.4E-04	1.3E-04
WNW	1.0E-04	1.0E-04	6.3E-05	7.9E-05	1.0E-04	1.4E-04	1.2E-04
W	1.7E-04	1.8E-04	1.0E-04	1.3E-04	1.7E-04	2.4E-04	2.1E-04
WSW	2.3E-04	2.4E-04	1.3E-04	1.7E-04	2.3E-04	3.4E-04	2.9E-04
SW	1.3E-04	1.3E-04	7.2E-05	9.6E-05	1.3E-04	1.9E-04	1.6E-04
SSW	9.7E-05	1.0E-04	5.7E-05	7.4E-05	9.8E-05	1.4E-04	1.2E-04
S	1.0E-04	1.1E-04	6.2E-05	7.9E-05	1.0E-04	1.5E-04	1.3E-04
SSE	1.5E-04	1.6E-04	9.8E-05	1.2E-04	1.5E-04	2.1E-04	1.8E-04
SE	2.1E-04	2.2E-04	1.4E-04	1.7E-04	2.1E-04	2.9E-04	2.6E-04
ESE	2.3E-04	2.5E-04	1.5E-04	1.9E-04	2.4E-04	3.3E-04	2.9E-04
E	3.4E-04	3.6E-04	2.1E-04	2.7E-04	3.5E-04	4.8E-04	4.2E-04
ENE	4.0E-04	4.2E-04	2.4E-04	3.1E-04	4.0E-04	5.5E-04	4.9E-04
NE	3.6E-04	3.8E-04	2.1E-04	2.8E-04	3.6E-04	5.1E-04	4.5E-04
NNE	2.4E-04	2.6E-04	1.4E-04	1.9E-04	2.5E-04	3.5E-04	3.1E-04

	Distance (m)						
Direction	1125	1159	1304	1301	1315	1241	1242
N	1.8E-04	1.7E-04	1.5E-04	1.5E-04	1.5E-04	1.6E-04	1.6E-04
NNW	1.2E-04	1.2E-04	1.0E-04	1.0E-04	1.0E-04	1.1E-04	1.1E-04
NW	1.2E-04	1.1E-04	1.0E-04	1.0E-04	9.9E-05	1.1E-04	1.1E-04
WNW	1.1E-04	1.1E-04	9.6E-05	9.6E-05	9.5E-05	1.0E-04	1.0E-04
W	2.0E-04	1.9E-04	1.6E-04	1.6E-04	1.6E-04	1.7E-04	1.7E-04
WSW	2.7E-04	2.6E-04	2.2E-04	2.2E-04	2.2E-04	2.3E-04	2.3E-04
SW	1.5E-04	1.4E-04	1.2E-04	1.2E-04	1.2E-04	1.3E-04	1.3E-04
SSW	1.1E-04	1.1E-04	9.2E-05	9.3E-05	9.1E-05	9.8E-05	9.8E-05
S	1.2E-04	1.1E-04	9.8E-05	9.8E-05	9.7E-05	1.0E-04	1.0E-04
SSE	1.7E-04	1.7E-04	1.4E-04	1.5E-04	1.4E-04	1.5E-04	1.5E-04
SE	2.4E-04	2.3E-04	2.0E-04	2.0E-04	2.0E-04	2.1E-04	2.1E-04
ESE	2.7E-04	2.6E-04	2.2E-04	2.2E-04	2.2E-04	2.4E-04	2.4E-04
E	3.9E-04	3.8E-04	3.3E-04	3.3E-04	3.3E-04	3.5E-04	3.5E-04
ENE	4.5E-04	4.4E-04	3.8E-04	3.8E-04	3.8E-04	4.0E-04	4.0E-04
NE	4.1E-04	4.0E-04	3.4E-04	3.5E-04	3.4E-04	3.7E-04	3.7E-04
NNE	2.8E-04	2.7E-04	2.3E-04	2.3E-04	2.3E-04	2.5E-04	2.5E-04

000113

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1861	1397	1212	1208	1750	1708
N	9.6E-05	1.4E-04	1.6E-04	1.6E-04	1.0E-04	1.1E-04
NNW	6.6E-05	9.3E-05	1.1E-04	1.1E-04	7.1E-05	7.3E-05
NW	6.6E-05	9.2E-05	1.1E-04	1.1E-04	7.1E-05	7.3E-05
WNW	6.4E-05	8.9E-05	1.0E-04	1.0E-04	6.9E-05	7.1E-05
W	1.0E-04	1.5E-04	1.8E-04	1.8E-04	1.1E-04	1.2E-04
WSW	1.3E-04	2.0E-04	2.4E-04	2.4E-04	1.5E-04	1.5E-04
SW	7.5E-05	1.1E-04	1.3E-04	1.3E-04	8.1E-05	8.3E-05
SSW	5.9E-05	8.4E-05	1.0E-04	1.0E-04	6.4E-05	6.6E-05
S	6.4E-05	9.0E-05	1.1E-04	1.1E-04	6.8E-05	7.0E-05
SSE	1.0E-04	1.3E-04	1.6E-04	1.6E-04	1.1E-04	1.1E-04
SE	1.4E-04	1.9E-04	2.2E-04	2.2E-04	1.5E-04	1.5E-04
ESE	1.5E-04	2.1E-04	2.4E-04	2.5E-04	1.6E-04	1.7E-04
E	2.2E-04	3.0E-04	3.6E-04	3.6E-04	2.3E-04	2.4E-04
ENE	2.5E-04	3.5E-04	4.2E-04	4.2E-04	2.7E-04	2.7E-04
NE	2.2E-04	3.2E-04	3.8E-04	3.8E-04	2.4E-04	2.5E-04
NNE	1.5E-04	2.1E-04	2.6E-04	2.6E-04	1.6E-04	1.6E-04

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m) 1255	1207	1913	1543	1245	947	1055
N	2.0E-09	2.1E-09	1.2E-09	1.5E-09	2.0E-09	2.8E-09	2.5E-09
NNW	1.4E-09	1.4E-09	8.0E-10	1.0E-09	1.4E-09	1.9E-09	1.7E-09
NW	1.3E-09	1.4E-09	8.0E-10	1.0E-09	1.3E-09	1.8E-09	1.6E-09
WNW	1.3E-09	1.3E-09	7.8E-10	9.9E-10	1.3E-09	1.8E-09	1.6E-09
W	2.2E-09	2.3E-09	1.3E-09	1.7E-09	2.2E-09	3.1E-09	2.7E-09
WSW	3.0E-09	3.1E-09	1.7E-09	2.2E-09	3.0E-09	4.4E-09	3.8E-09
SW	1.6E-09	1.7E-09	9.0E-10	1.2E-09	1.6E-09	2.4E-09	2.1E-09
SSW	1.2E-09	1.3E-09	7.1E-10	9.3E-10	1.2E-09	1.8E-09	1.6E-09
S	1.3E-09	1.4E-09	7.7E-10	1.0E-09	1.3E-09	1.9E-09	1.6E-09
SSE	1.9E-09	2.0E-09	1.2E-09	1.5E-09	2.0E-09	2.7E-09	2.4E-09
SE	2.7E-09	2.8E-09	1.8E-09	2.2E-09	2.7E-09	3.8E-09	3.3E-09
ESE	3.0E-09	3.2E-09	1.9E-09	2.4E-09	3.0E-09	4.2E-09	3.7E-09
E	4.5E-09	4.7E-09	2.7E-09	3.5E-09	4.5E-09	6.2E-09	5.5E-09
ENE	5.2E-09	5.4E-09	3.1E-09	4.0E-09	5.2E-09	7.2E-09	6.4E-09
NE	4.7E-09	4.9E-09	2.8E-09	3.6E-09	4.7E-09	6.6E-09	5.8E-09
NNE	3.2E-09	3.3E-09	1.8E-09	2.4E-09	3.2E-09	4.6E-09	4.0E-09

Direction	Distance (m) 1125	1159	1304	1301	1315	1241	1242
N	2.3E-09	2.2E-09	1.9E-09	1.9E-09	1.9E-09	2.0E-09	2.0E-09
NNW	1.6E-09	1.5E-09	1.3E-09	1.3E-09	1.3E-09	1.4E-09	1.4E-09
NW	1.5E-09	1.5E-09	1.3E-09	1.3E-09	1.3E-09	1.3E-09	1.3E-09
WNW	1.5E-09	1.4E-09	1.2E-09	1.2E-09	1.2E-09	1.3E-09	1.3E-09
W	2.5E-09	2.4E-09	2.1E-09	2.1E-09	2.1E-09	2.2E-09	2.2E-09
WSW	3.5E-09	3.3E-09	2.8E-09	2.8E-09	2.8E-09	3.0E-09	3.0E-09
SW	1.9E-09	1.8E-09	1.5E-09	1.5E-09	1.5E-09	1.7E-09	1.7E-09
SSW	1.4E-09	1.4E-09	1.2E-09	1.2E-09	1.2E-09	1.2E-09	1.2E-09
S	1.5E-09	1.4E-09	1.2E-09	1.2E-09	1.2E-09	1.3E-09	1.3E-09
SSE	2.2E-09	2.1E-09	1.9E-09	1.9E-09	1.8E-09	2.0E-09	2.0E-09
SE	3.1E-09	3.0E-09	2.6E-09	2.6E-09	2.6E-09	2.8E-09	2.8E-09
ESE	3.4E-09	3.3E-09	2.9E-09	2.9E-09	2.9E-09	3.1E-09	3.1E-09
E	5.1E-09	4.9E-09	4.3E-09	4.3E-09	4.2E-09	4.5E-09	4.5E-09
ENE	5.9E-09	5.7E-09	4.9E-09	5.0E-09	4.9E-09	5.2E-09	5.2E-09
NE	5.4E-09	5.2E-09	4.5E-09	4.5E-09	4.4E-09	4.8E-09	4.7E-09
NNE	3.7E-09	3.5E-09	3.0E-09	3.0E-09	3.0E-09	3.2E-09	3.2E-09

000115

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1861	1397	1212	1208	1750	1708
N	1.2E-09	1.7E-09	2.1E-09	2.1E-09	1.3E-09	1.4E-09
NNW	8.3E-10	1.2E-09	1.4E-09	1.4E-09	8.9E-10	9.2E-10
NW	8.2E-10	1.2E-09	1.4E-09	1.4E-09	8.9E-10	9.1E-10
WNW	8.0E-10	1.1E-09	1.3E-09	1.3E-09	8.6E-10	8.8E-10
W	1.3E-09	1.9E-09	2.3E-09	2.3E-09	1.4E-09	1.5E-09
WSW	1.7E-09	2.6E-09	3.1E-09	3.1E-09	1.9E-09	1.9E-09
SW	9.4E-10	1.4E-09	1.7E-09	1.7E-09	1.0E-09	1.1E-09
SSW	7.3E-10	1.1E-09	1.3E-09	1.3E-09	7.9E-10	8.2E-10
S	8.0E-10	1.1E-09	1.4E-09	1.4E-09	8.6E-10	8.8E-10
SSE	1.3E-09	1.7E-09	2.0E-09	2.0E-09	1.3E-09	1.4E-09
SE	1.8E-09	2.4E-09	2.8E-09	2.8E-09	1.9E-09	2.0E-09
ESE	2.0E-09	2.7E-09	3.1E-09	3.2E-09	2.1E-09	2.2E-09
E	2.8E-09	3.9E-09	4.6E-09	4.7E-09	3.0E-09	3.1E-09
ENE	3.2E-09	4.5E-09	5.4E-09	5.4E-09	3.5E-09	3.6E-09
NE	2.9E-09	4.1E-09	4.9E-09	4.9E-09	3.1E-09	3.2E-09
NNE	1.9E-09	2.7E-09	3.3E-09	3.3E-09	2.0E-09	2.1E-09

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Apr 7, 1998 3:48 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent (mrem/year)
3.90E-04

At This Location: 1272 Meters East Northeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Plant 8 Eimco Filters [G2]

Dataset Name: 97-P240-G2
Dataset Date: Apr 7, 1998 12:30 am
Wind File: WNDFILES\97STAR.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 1272 Meters East Northeast
Lifetime Fatal Cancer Risk: 5.08E-09

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	1.31E-06
BREAST	1.49E-06
R MAR	3.18E-05
LUNGS	3.01E-03
THYROID	1.27E-06
ENDOST	4.41E-04
RMNDR	3.60E-05
EFFEC	3.90E-04

RADIONUCLIDE EMISSIONS DURING THE YEAR 1997

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	1.00	1.8E-06	1.8E-06
U-235	Y	1.00	9.4E-08	9.4E-08
U-236	Y	1.00	6.4E-08	6.4E-08
U-238	Y	1.00	2.3E-06	2.3E-06
RA-226	W	1.00	1.6E-09	1.6E-09
RA-228	W	1.00	6.3E-09	6.3E-09
TH-228	Y	1.00	6.7E-08	6.7E-08
TH-230	Y	1.00	4.7E-09	4.7E-09
TH-232	Y	1.00	1.0E-08	1.0E-08
TH-234	Y	1.00	9.8E-06	9.8E-06

SITE INFORMATION

Temperature: 11 degrees C
Precipitation: 102 cm/y
Mixing Height: 950 m

SOURCE INFORMATION

Source Number:	1
Stack Height (m):	13.72
Diameter (m):	0.20
Plume Rise Momentum (m/s): (Exit Velocity)	1.31E+01

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

1272	1534	1980	1919	2595	2251	2314	1627	1485	2328
2394	1694	2311	1578	1900	1992	1945	1820	1850	1821

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Apr 7, 1998 3:48 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Plant 8 Eimco Filters [G2]

Dataset Name: 97-P240-G2
Dataset Date: Apr 7, 1998 12:30 am
Wind File: WNDFILES\97STAR.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	1.31E-06
BREAST	1.49E-06
R MAR	3.18E-05
LUNGS	3.01E-03
THYROID	1.27E-06
ENDOST	4.41E-04
RMNDR	3.60E-05
EFFEC	3.90E-04

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	2.56E-05
INHALATION	3.64E-04
AIR IMMERSION	3.63E-11
GROUND SURFACE	2.59E-07
INTERNAL	3.90E-04
EXTERNAL	2.59E-07
TOTAL	3.90E-04

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	1.66E-04
U-235	8.44E-06
U-236	5.73E-06
U-238	1.95E-04
RA-226	2.12E-08
RA-228	3.47E-08
TH-228	1.13E-05
TH-230	7.95E-07
TH-232	2.56E-06
TH-234	5.75E-07
TOTAL	3.90E-04

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	3.58E-11
BONE	2.35E-11
THYROID	2.93E-13
BREAST	3.34E-12
LUNG	4.93E-09
STOMACH	2.29E-12
BOWEL	6.65E-12
LIVER	2.08E-12
PANCREAS	1.29E-12
URINARY	7.50E-11
OTHER	1.58E-12
TOTAL	5.08E-09

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	1.38E-10
INHALATION	4.94E-09
AIR IMMERSION	8.08E-16
GROUND SURFACE	5.94E-12
INTERNAL	5.07E-09
EXTERNAL	5.94E-12
TOTAL	5.08E-09

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	2.12E-09
U-235	1.10E-10
U-236	7.33E-11
U-238	2.51E-09
RA-226	2.71E-13
RA-228	3.46E-13
TH-228	2.27E-10
TH-230	6.51E-12
TH-232	1.44E-11
TH-234	1.75E-11
TOTAL	5.08E-09

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

Direction	Distance (m) 1272	1534	1980	1919	2595	2251	2314
N	1.5E-04	1.2E-04	8.8E-05	9.1E-05	6.5E-05	7.6E-05	7.4E-05
NNW	1.0E-04	8.1E-05	6.0E-05	6.2E-05	4.4E-05	5.2E-05	5.0E-05
NW	1.0E-04	8.1E-05	6.0E-05	6.2E-05	4.4E-05	5.2E-05	5.0E-05
WNW	9.7E-05	7.8E-05	5.9E-05	6.1E-05	4.5E-05	5.1E-05	5.0E-05
W	1.7E-04	1.3E-04	9.6E-05	9.9E-05	7.2E-05	8.3E-05	8.1E-05
WSW	2.2E-04	1.7E-04	1.2E-04	1.3E-04	8.5E-05	1.0E-04	9.9E-05
SW	1.2E-04	9.5E-05	6.7E-05	7.0E-05	4.8E-05	5.7E-05	5.5E-05
SSW	9.4E-05	7.3E-05	5.3E-05	5.5E-05	3.9E-05	4.6E-05	4.4E-05
S	9.9E-05	7.8E-05	5.8E-05	6.0E-05	4.3E-05	5.0E-05	4.9E-05
SSE	1.5E-04	1.2E-04	9.3E-05	9.6E-05	7.4E-05	8.3E-05	8.1E-05
SE	2.1E-04	1.7E-04	1.3E-04	1.4E-04	1.1E-04	1.2E-04	1.2E-04
ESE	2.3E-04	1.9E-04	1.5E-04	1.5E-04	1.2E-04	1.3E-04	1.3E-04
E	3.4E-04	2.7E-04	2.0E-04	2.1E-04	1.6E-04	1.8E-04	1.7E-04
ENE	3.9E-04	3.1E-04	2.3E-04	2.4E-04	1.7E-04	2.0E-04	1.9E-04
NE	3.5E-04	2.8E-04	2.0E-04	2.1E-04	1.5E-04	1.8E-04	1.7E-04
NNE	2.4E-04	1.9E-04	1.4E-04	1.4E-04	9.8E-05	1.2E-04	1.1E-04

Direction	Distance (m) 1627	1485	2328	2394	1694	2311	1578
N	1.1E-04	1.2E-04	7.3E-05	7.1E-05	1.1E-04	7.4E-05	1.1E-04
NNW	7.6E-05	8.5E-05	5.0E-05	4.8E-05	7.2E-05	5.0E-05	7.9E-05
NW	7.5E-05	8.4E-05	5.0E-05	4.8E-05	7.2E-05	5.0E-05	7.8E-05
WNW	7.3E-05	8.1E-05	5.0E-05	4.8E-05	6.9E-05	5.0E-05	7.5E-05
W	1.2E-04	1.4E-04	8.0E-05	7.8E-05	1.2E-04	8.1E-05	1.3E-04
WSW	1.6E-04	1.8E-04	9.8E-05	9.4E-05	1.5E-04	9.9E-05	1.7E-04
SW	8.7E-05	9.9E-05	5.4E-05	5.3E-05	8.3E-05	5.5E-05	9.1E-05
SSW	6.8E-05	7.6E-05	4.4E-05	4.3E-05	6.4E-05	4.4E-05	7.1E-05
S	7.3E-05	8.1E-05	4.9E-05	4.7E-05	6.9E-05	4.9E-05	7.6E-05
SSE	1.1E-04	1.2E-04	8.1E-05	7.9E-05	1.1E-04	8.1E-05	1.2E-04
SE	1.6E-04	1.7E-04	1.2E-04	1.2E-04	1.5E-04	1.2E-04	1.6E-04
ESE	1.7E-04	1.9E-04	1.3E-04	1.3E-04	1.7E-04	1.3E-04	1.8E-04
E	2.5E-04	2.8E-04	1.7E-04	1.7E-04	2.4E-04	1.8E-04	2.6E-04
ENE	2.9E-04	3.2E-04	1.9E-04	1.9E-04	2.8E-04	1.9E-04	3.0E-04
NE	2.6E-04	2.9E-04	1.7E-04	1.6E-04	2.5E-04	1.7E-04	2.7E-04
NNE	1.7E-04	1.9E-04	1.1E-04	1.1E-04	1.6E-04	1.1E-04	1.8E-04

000126

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1900	1992	1945	1820	1850	1821
N	9.2E-05	8.7E-05	9.0E-05	9.7E-05	9.5E-05	9.7E-05
NNW	6.3E-05	5.9E-05	6.1E-05	6.6E-05	6.5E-05	6.6E-05
NW	6.3E-05	5.9E-05	6.1E-05	6.6E-05	6.5E-05	6.6E-05
WNW	6.1E-05	5.8E-05	6.0E-05	6.4E-05	6.3E-05	6.4E-05
W	1.0E-04	9.5E-05	9.8E-05	1.1E-04	1.0E-04	1.1E-04
WSW	1.3E-04	1.2E-04	1.2E-04	1.4E-04	1.3E-04	1.4E-04
SW	7.1E-05	6.7E-05	6.9E-05	7.5E-05	7.3E-05	7.5E-05
SSW	5.6E-05	5.3E-05	5.4E-05	5.9E-05	5.8E-05	5.9E-05
S	6.1E-05	5.7E-05	5.9E-05	6.4E-05	6.3E-05	6.4E-05
SSE	9.6E-05	9.2E-05	9.4E-05	1.0E-04	9.9E-05	1.0E-04
SE	1.4E-04	1.3E-04	1.4E-04	1.4E-04	1.4E-04	1.4E-04
ESE	1.5E-04	1.4E-04	1.5E-04	1.6E-04	1.5E-04	1.6E-04
E	2.1E-04	2.0E-04	2.1E-04	2.2E-04	2.2E-04	2.2E-04
ENE	2.4E-04	2.3E-04	2.3E-04	2.5E-04	2.5E-04	2.5E-04
NE	2.1E-04	2.0E-04	2.1E-04	2.3E-04	2.2E-04	2.3E-04
NNE	1.4E-04	1.3E-04	1.4E-04	1.5E-04	1.5E-04	1.5E-04

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m) 1272	1534	1980	1919	2595	2251	2314
N	1.9E-09	1.5E-09	1.1E-09	1.2E-09	8.2E-10	9.7E-10	9.4E-10
NNW	1.3E-09	1.0E-09	7.6E-10	7.9E-10	5.5E-10	6.5E-10	6.3E-10
NW	1.3E-09	1.0E-09	7.6E-10	7.8E-10	5.6E-10	6.5E-10	6.3E-10
WNW	1.2E-09	9.9E-10	7.4E-10	7.7E-10	5.6E-10	6.5E-10	6.3E-10
W	2.1E-09	1.7E-09	1.2E-09	1.3E-09	9.1E-10	1.1E-09	1.0E-09
WSW	2.9E-09	2.2E-09	1.6E-09	1.6E-09	1.1E-09	1.3E-09	1.3E-09
SW	1.6E-09	1.2E-09	8.5E-10	8.9E-10	6.0E-10	7.2E-10	6.9E-10
SSW	1.2E-09	9.3E-10	6.7E-10	7.0E-10	4.8E-10	5.7E-10	5.5E-10
S	1.3E-09	1.0E-09	7.3E-10	7.6E-10	5.4E-10	6.3E-10	6.1E-10
SSE	1.9E-09	1.5E-09	1.2E-09	1.2E-09	9.4E-10	1.1E-09	1.0E-09
SE	2.7E-09	2.2E-09	1.7E-09	1.8E-09	1.4E-09	1.6E-09	1.5E-09
ESE	3.0E-09	2.4E-09	1.9E-09	1.9E-09	1.5E-09	1.7E-09	1.7E-09
E	4.4E-09	3.5E-09	2.6E-09	2.7E-09	2.0E-09	2.3E-09	2.3E-09
ENE	5.1E-09	4.0E-09	3.0E-09	3.1E-09	2.2E-09	2.6E-09	2.5E-09
NE	4.6E-09	3.6E-09	2.6E-09	2.8E-09	1.9E-09	2.3E-09	2.2E-09
NNE	3.1E-09	2.4E-09	1.7E-09	1.8E-09	1.3E-09	1.5E-09	1.4E-09

Direction	Distance (m) 1627	1485	2328	2394	1694	2311	1578
N	1.4E-09	1.6E-09	9.3E-10	9.0E-10	1.4E-09	9.4E-10	1.5E-09
NNW	9.7E-10	1.1E-09	6.3E-10	6.1E-10	9.2E-10	6.3E-10	1.0E-09
NW	9.6E-10	1.1E-09	6.3E-10	6.1E-10	9.1E-10	6.3E-10	9.9E-10
WNW	9.2E-10	1.0E-09	6.2E-10	6.1E-10	8.8E-10	6.3E-10	9.6E-10
W	1.6E-09	1.7E-09	1.0E-09	1.0E-09	1.5E-09	1.0E-09	1.6E-09
WSW	2.1E-09	2.3E-09	1.3E-09	1.2E-09	1.9E-09	1.3E-09	2.2E-09
SW	1.1E-09	1.3E-09	6.9E-10	6.6E-10	1.1E-09	6.9E-10	1.2E-09
SSW	8.6E-10	9.7E-10	5.5E-10	5.3E-10	8.2E-10	5.5E-10	9.0E-10
S	9.3E-10	1.0E-09	6.1E-10	5.9E-10	8.8E-10	6.1E-10	9.6E-10
SSE	1.4E-09	1.6E-09	1.0E-09	1.0E-09	1.4E-09	1.0E-09	1.5E-09
SE	2.1E-09	2.3E-09	1.5E-09	1.5E-09	2.0E-09	1.5E-09	2.1E-09
ESE	2.2E-09	2.5E-09	1.6E-09	1.6E-09	2.2E-09	1.7E-09	2.3E-09
E	3.3E-09	3.6E-09	2.2E-09	2.2E-09	3.1E-09	2.3E-09	3.4E-09
ENE	3.8E-09	4.2E-09	2.5E-09	2.4E-09	3.6E-09	2.5E-09	3.9E-09
NE	3.4E-09	3.8E-09	2.2E-09	2.1E-09	3.2E-09	2.2E-09	3.5E-09
NNE	2.2E-09	2.5E-09	1.4E-09	1.4E-09	2.1E-09	1.4E-09	2.3E-09

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INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1900	1992	1945	1820	1850	1821
N	1.2E-09	1.1E-09	1.1E-09	1.2E-09	1.2E-09	1.2E-09
NNW	8.0E-10	7.5E-10	7.7E-10	8.4E-10	8.2E-10	8.4E-10
NW	7.9E-10	7.5E-10	7.7E-10	8.4E-10	8.2E-10	8.4E-10
WNW	7.7E-10	7.4E-10	7.5E-10	8.1E-10	8.0E-10	8.1E-10
W	1.3E-09	1.2E-09	1.3E-09	1.4E-09	1.3E-09	1.4E-09
WSW	1.7E-09	1.6E-09	1.6E-09	1.8E-09	1.7E-09	1.8E-09
SW	9.0E-10	8.4E-10	8.7E-10	9.5E-10	9.3E-10	9.5E-10
SSW	7.0E-10	6.6E-10	6.8E-10	7.4E-10	7.3E-10	7.4E-10
S	7.7E-10	7.3E-10	7.5E-10	8.1E-10	7.9E-10	8.1E-10
SSE	1.2E-09	1.2E-09	1.2E-09	1.3E-09	1.3E-09	1.3E-09
SE	1.8E-09	1.7E-09	1.7E-09	1.9E-09	1.8E-09	1.8E-09
ESE	1.9E-09	1.9E-09	1.9E-09	2.0E-09	2.0E-09	2.0E-09
E	2.8E-09	2.6E-09	2.7E-09	2.9E-09	2.8E-09	2.9E-09
ENE	3.1E-09	3.0E-09	3.0E-09	3.3E-09	3.2E-09	3.3E-09
NE	2.8E-09	2.6E-09	2.7E-09	2.9E-09	2.9E-09	2.9E-09
NNE	1.8E-09	1.7E-09	1.8E-09	1.9E-09	1.9E-09	1.9E-09

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Apr 7, 1998 3:49 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent (mrem/year)
7.41E-05

At This Location: 1016 Meters East Northeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Building 11 Laundry Facility [G1]

Dataset Name: 97-P274-G1
Dataset Date: Apr 7, 1998 1:31 pm
Wind File: WNDFILES\97STAR.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 1016 Meters East Northeast
Lifetime Fatal Cancer Risk: 8.47E-10

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	2.20E-07
BREAST	2.42E-07
R MAR	2.60E-05
LUNGS	5.02E-04
THYROID	2.16E-07
ENDOST	3.28E-04
RMNDR	2.83E-06
EFFEC	7.41E-05

RADIONUCLIDE EMISSIONS DURING THE YEAR 1997

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	0.30	9.9E-08	9.9E-08
U-235	Y	1.00	1.5E-08	1.5E-08
U-236	Y	1.00	1.5E-08	1.5E-08
U-238	Y	0.30	7.0E-08	7.0E-08
RA-226	W	1.00	3.2E-11	3.2E-11
RA-228	W	1.00	1.3E-10	1.3E-10
TH-228	Y	1.00	1.7E-08	1.7E-08
TH-230	Y	1.00	6.7E-08	6.7E-08
TH-232	Y	1.00	2.4E-08	2.4E-08
TH-234	Y	1.00	2.0E-07	2.0E-07

SITE INFORMATION

Temperature:	11 degrees C
Precipitation:	102 cm/y
Mixing Height:	950 m

SOURCE INFORMATION

Source Number:	1
Stack Height (m):	3.68
Diameter (m):	0.56
Plume Rise Momentum (m/s): (Exit Velocity)	1.30E+01

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

1343	1308	2048	1680	1378	1016	1057	1102	1132	1256
1247	1232	1131	1126	1730	1260	1093	1094	1728	1734

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Apr 7, 1998 3:49 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Building 11 Laundry Facility [G1]

Dataset Name: 97-P274-G1
Dataset Date: Apr 7, 1998 1:31 pm
Wind File: WNDFILES\97STAR.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	2.20E-07
BREAST	2.42E-07
R MAR	2.60E-05
LUNGS	5.02E-04
THYROID	2.16E-07
ENDOST	3.28E-04
RMNDR	2.83E-06
EFFEC	7.41E-05

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	2.19E-06
INHALATION	7.18E-05
AIR IMMERSION	2.43E-12
GROUND SURFACE	5.46E-08
INTERNAL	7.40E-05
EXTERNAL	5.46E-08
TOTAL	7.41E-05

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	2.40E-05
U-235	2.06E-06
U-236	2.05E-06
U-238	1.53E-05
RA-226	6.47E-10
RA-228	1.05E-09
TH-228	4.36E-06
TH-230	1.74E-05
TH-232	8.86E-06
TH-234	1.75E-08
TOTAL	7.41E-05

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	2.27E-11
BONE	1.50E-11
THYROID	5.23E-14
BREAST	5.41E-13
LUNG	8.01E-10
STOMACH	3.33E-13
BOWEL	4.86E-13
LIVER	9.23E-13
PANCREAS	2.15E-13
URINARY	5.46E-12
OTHER	2.63E-13
TOTAL	8.47E-10

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	1.07E-11
INHALATION	8.35E-10
AIR IMMERSION	5.53E-17
GROUND SURFACE	1.26E-12
INTERNAL	8.46E-10
EXTERNAL	1.26E-12
TOTAL	8.47E-10

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	3.13E-10
U-235	2.70E-11
U-236	2.63E-11
U-238	2.01E-10
RA-226	8.32E-15
RA-228	1.06E-14
TH-228	8.73E-11
TH-230	1.43E-10
TH-232	4.99E-11
TH-234	5.37E-13
TOTAL	8.47E-10

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	1343	1308	2048	1680	1378	1016	1057
N	1.9E-05	2.0E-05	1.1E-05	1.4E-05	1.9E-05	2.8E-05	2.7E-05
NNW	1.3E-05	1.4E-05	7.5E-06	9.7E-06	1.3E-05	1.9E-05	1.8E-05
NW	1.3E-05	1.3E-05	7.5E-06	9.5E-06	1.2E-05	1.8E-05	1.7E-05
WNW	1.2E-05	1.2E-05	7.4E-06	9.1E-06	1.2E-05	1.7E-05	1.6E-05
W	2.1E-05	2.2E-05	1.3E-05	1.6E-05	2.1E-05	3.2E-05	3.0E-05
WSW	2.9E-05	3.0E-05	1.6E-05	2.1E-05	2.8E-05	4.5E-05	4.2E-05
SW	1.6E-05	1.6E-05	8.5E-06	1.1E-05	1.5E-05	2.4E-05	2.3E-05
SSW	1.2E-05	1.3E-05	6.9E-06	8.9E-06	1.2E-05	1.8E-05	1.7E-05
S	1.3E-05	1.3E-05	7.3E-06	9.3E-06	1.2E-05	1.9E-05	1.8E-05
SSE	1.9E-05	2.0E-05	1.2E-05	1.5E-05	1.9E-05	2.8E-05	2.6E-05
SE	2.7E-05	2.8E-05	1.8E-05	2.2E-05	2.6E-05	3.9E-05	3.7E-05
ESE	2.9E-05	3.0E-05	1.9E-05	2.3E-05	2.8E-05	4.2E-05	3.9E-05
E	4.3E-05	4.4E-05	2.6E-05	3.3E-05	4.2E-05	6.2E-05	5.9E-05
ENE	5.1E-05	5.3E-05	3.0E-05	3.8E-05	4.9E-05	7.4E-05	7.0E-05
NE	4.6E-05	4.8E-05	2.6E-05	3.4E-05	4.4E-05	6.7E-05	6.4E-05
NNE	3.1E-05	3.2E-05	1.8E-05	2.3E-05	3.0E-05	4.6E-05	4.4E-05

	Distance (m)						
Direction	1102	1132	1256	1247	1232	1131	1126
N	2.5E-05	2.4E-05	2.1E-05	2.1E-05	2.2E-05	2.4E-05	2.4E-05
NNW	1.7E-05	1.6E-05	1.4E-05	1.4E-05	1.5E-05	1.6E-05	1.7E-05
NW	1.6E-05	1.6E-05	1.4E-05	1.4E-05	1.4E-05	1.6E-05	1.6E-05
WNW	1.5E-05	1.5E-05	1.3E-05	1.3E-05	1.3E-05	1.5E-05	1.5E-05
W	2.8E-05	2.7E-05	2.3E-05	2.4E-05	2.4E-05	2.7E-05	2.7E-05
WSW	3.9E-05	3.8E-05	3.2E-05	3.3E-05	3.3E-05	3.8E-05	3.8E-05
SW	2.1E-05	2.0E-05	1.7E-05	1.8E-05	1.8E-05	2.0E-05	2.1E-05
SSW	1.6E-05	1.6E-05	1.3E-05	1.4E-05	1.4E-05	1.6E-05	1.6E-05
S	1.7E-05	1.6E-05	1.4E-05	1.4E-05	1.4E-05	1.6E-05	1.6E-05
SSE	2.5E-05	2.4E-05	2.1E-05	2.1E-05	2.2E-05	2.4E-05	2.4E-05
SE	3.5E-05	3.4E-05	3.0E-05	3.0E-05	3.0E-05	3.4E-05	3.4E-05
ESE	3.7E-05	3.6E-05	3.2E-05	3.2E-05	3.2E-05	3.6E-05	3.6E-05
E	5.5E-05	5.4E-05	4.7E-05	4.7E-05	4.8E-05	5.4E-05	5.4E-05
ENE	6.6E-05	6.4E-05	5.6E-05	5.6E-05	5.7E-05	6.4E-05	6.5E-05
NE	6.0E-05	5.8E-05	5.0E-05	5.1E-05	5.2E-05	5.8E-05	5.9E-05
NNE	4.1E-05	3.9E-05	3.4E-05	3.4E-05	3.5E-05	3.9E-05	4.0E-05

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INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1730	1260	1093	1094	1728	1734
N	1.4E-05	2.1E-05	2.5E-05	2.5E-05	1.4E-05	1.4E-05
NNW	9.3E-06	1.4E-05	1.7E-05	1.7E-05	9.3E-06	9.3E-06
NW	9.1E-06	1.4E-05	1.6E-05	1.6E-05	9.2E-06	9.1E-06
WNW	8.8E-06	1.3E-05	1.5E-05	1.5E-05	8.8E-06	8.8E-06
W	1.5E-05	2.3E-05	2.9E-05	2.9E-05	1.5E-05	1.5E-05
WSW	2.0E-05	3.2E-05	4.0E-05	4.0E-05	2.0E-05	2.0E-05
SW	1.1E-05	1.7E-05	2.1E-05	2.1E-05	1.1E-05	1.1E-05
SSW	8.6E-06	1.3E-05	1.6E-05	1.6E-05	8.6E-06	8.5E-06
S	9.0E-06	1.4E-05	1.7E-05	1.7E-05	9.0E-06	9.0E-06
SSE	1.5E-05	2.1E-05	2.5E-05	2.5E-05	1.5E-05	1.5E-05
SE	2.1E-05	2.9E-05	3.5E-05	3.5E-05	2.1E-05	2.1E-05
ESE	2.2E-05	3.1E-05	3.8E-05	3.8E-05	2.2E-05	2.2E-05
E	3.2E-05	4.7E-05	5.6E-05	5.6E-05	3.2E-05	3.2E-05
ENE	3.7E-05	5.6E-05	6.7E-05	6.7E-05	3.7E-05	3.7E-05
NE	3.3E-05	5.0E-05	6.1E-05	6.1E-05	3.3E-05	3.2E-05
NNE	2.2E-05	3.4E-05	4.1E-05	4.1E-05	2.2E-05	2.2E-05

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m) 1343	1308	2048	1680	1378	1016	1057
N	2.2E-10	2.3E-10	1.3E-10	1.6E-10	2.1E-10	3.2E-10	3.0E-10
NNW	1.5E-10	1.5E-10	8.4E-11	1.1E-10	1.4E-10	2.2E-10	2.1E-10
NW	1.4E-10	1.5E-10	8.4E-11	1.1E-10	1.4E-10	2.0E-10	1.9E-10
WNW	1.3E-10	1.4E-10	8.2E-11	1.0E-10	1.3E-10	1.9E-10	1.8E-10
W	2.4E-10	2.5E-10	1.4E-10	1.8E-10	2.3E-10	3.6E-10	3.4E-10
WSW	3.3E-10	3.5E-10	1.8E-10	2.4E-10	3.2E-10	5.1E-10	4.8E-10
SW	1.8E-10	1.8E-10	9.6E-11	1.3E-10	1.7E-10	2.7E-10	2.6E-10
SSW	1.4E-10	1.4E-10	7.7E-11	1.0E-10	1.3E-10	2.1E-10	2.0E-10
S	1.4E-10	1.5E-10	8.2E-11	1.0E-10	1.4E-10	2.1E-10	2.0E-10
SSE	2.2E-10	2.3E-10	1.4E-10	1.7E-10	2.1E-10	3.2E-10	3.0E-10
SE	3.1E-10	3.2E-10	2.1E-10	2.4E-10	3.0E-10	4.4E-10	4.2E-10
ESE	3.3E-10	3.4E-10	2.2E-10	2.6E-10	3.2E-10	4.7E-10	4.5E-10
E	4.9E-10	5.1E-10	3.0E-10	3.7E-10	4.7E-10	7.1E-10	6.7E-10
ENE	5.8E-10	6.0E-10	3.4E-10	4.3E-10	5.6E-10	8.5E-10	8.0E-10
NE	5.2E-10	5.4E-10	3.0E-10	3.9E-10	5.0E-10	7.7E-10	7.3E-10
NNE	3.5E-10	3.7E-10	2.0E-10	2.6E-10	3.4E-10	5.3E-10	5.0E-10

Direction	Distance (m) 1102	1132	1256	1247	1232	1131	1126
N	2.9E-10	2.8E-10	2.4E-10	2.4E-10	2.5E-10	2.8E-10	2.8E-10
NNW	1.9E-10	1.9E-10	1.6E-10	1.6E-10	1.7E-10	1.9E-10	1.9E-10
NW	1.8E-10	1.8E-10	1.5E-10	1.6E-10	1.6E-10	1.8E-10	1.8E-10
WNW	1.7E-10	1.7E-10	1.5E-10	1.5E-10	1.5E-10	1.7E-10	1.7E-10
W	3.2E-10	3.1E-10	2.7E-10	2.7E-10	2.7E-10	3.1E-10	3.1E-10
WSW	4.5E-10	4.3E-10	3.7E-10	3.7E-10	3.8E-10	4.3E-10	4.4E-10
SW	2.4E-10	2.3E-10	2.0E-10	2.0E-10	2.0E-10	2.3E-10	2.3E-10
SSW	1.8E-10	1.8E-10	1.5E-10	1.5E-10	1.6E-10	1.8E-10	1.8E-10
S	1.9E-10	1.8E-10	1.6E-10	1.6E-10	1.6E-10	1.8E-10	1.8E-10
SSE	2.8E-10	2.7E-10	2.4E-10	2.4E-10	2.5E-10	2.7E-10	2.8E-10
SE	4.0E-10	3.8E-10	3.4E-10	3.4E-10	3.4E-10	3.8E-10	3.9E-10
ESE	4.3E-10	4.1E-10	3.6E-10	3.6E-10	3.7E-10	4.1E-10	4.1E-10
E	6.3E-10	6.1E-10	5.3E-10	5.4E-10	5.5E-10	6.1E-10	6.2E-10
ENE	7.6E-10	7.3E-10	6.4E-10	6.4E-10	6.5E-10	7.3E-10	7.4E-10
NE	6.9E-10	6.6E-10	5.7E-10	5.8E-10	5.9E-10	6.6E-10	6.7E-10
NNE	4.7E-10	4.5E-10	3.9E-10	3.9E-10	4.0E-10	4.5E-10	4.5E-10

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INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1730	1260	1093	1094	1728	1734
N	1.6E-10	2.4E-10	2.9E-10	2.9E-10	1.6E-10	1.6E-10
NNW	1.0E-10	1.6E-10	2.0E-10	2.0E-10	1.0E-10	1.0E-10
NW	1.0E-10	1.5E-10	1.9E-10	1.9E-10	1.0E-10	1.0E-10
WNW	9.9E-11	1.5E-10	1.7E-10	1.7E-10	9.9E-11	9.9E-11
W	1.7E-10	2.7E-10	3.3E-10	3.3E-10	1.7E-10	1.7E-10
WSW	2.3E-10	3.7E-10	4.6E-10	4.6E-10	2.3E-10	2.3E-10
SW	1.2E-10	2.0E-10	2.4E-10	2.4E-10	1.2E-10	1.2E-10
SSW	9.6E-11	1.5E-10	1.9E-10	1.9E-10	9.6E-11	9.6E-11
S	1.0E-10	1.6E-10	1.9E-10	1.9E-10	1.0E-10	1.0E-10
SSE	1.7E-10	2.4E-10	2.9E-10	2.9E-10	1.7E-10	1.7E-10
SE	2.4E-10	3.4E-10	4.0E-10	4.0E-10	2.4E-10	2.4E-10
ESE	2.5E-10	3.6E-10	4.3E-10	4.3E-10	2.5E-10	2.5E-10
E	3.6E-10	5.3E-10	6.4E-10	6.4E-10	3.6E-10	3.6E-10
ENE	4.2E-10	6.3E-10	7.7E-10	7.7E-10	4.2E-10	4.2E-10
NE	3.7E-10	5.7E-10	7.0E-10	7.0E-10	3.7E-10	3.7E-10
NNE	2.5E-10	3.9E-10	4.7E-10	4.7E-10	2.5E-10	2.5E-10

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Apr 7, 1998 3:50 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

5.13E-05

At This Location: 1336 Meters East Northeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Building 11 Laundry Facility [G2]

Dataset Name: 97-P274-G2
Dataset Date: Apr 7, 1998 1:32 pm
Wind File: WNDFILES\97STAR.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 1336 Meters East Northeast
Lifetime Fatal Cancer Risk: 5.86E-10

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	1.53E-07
BREAST	1.69E-07
R MAR	1.80E-05
LUNGS	3.47E-04
THYROID	1.50E-07
ENDOST	2.27E-04
RMNDR	1.96E-06
EFFEC	5.13E-05

RADIONUCLIDE EMISSIONS DURING THE YEAR 1997

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	0.30	9.9E-08	9.9E-08
U-235	Y	1.00	1.5E-08	1.5E-08
U-236	Y	1.00	1.5E-08	1.5E-08
U-238	Y	0.30	7.0E-08	7.0E-08
RA-226	W	1.00	3.2E-11	3.2E-11
RA-228	W	1.00	1.3E-10	1.3E-10
TH-228	Y	1.00	1.7E-08	1.7E-08
TH-230	Y	1.00	6.7E-08	6.7E-08
TH-232	Y	1.00	2.4E-08	2.4E-08
TH-234	Y	1.00	2.0E-07	2.0E-07

SITE INFORMATION

Temperature: 11 degrees C
Precipitation: 102 cm/y
Mixing Height: 950 m

SOURCE INFORMATION

Source Number:	1
Stack Height (m):	3.68
Diameter (m):	0.56
Plume Rise Momentum (m/s): (Exit Velocity)	1.30E+01

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

1336	1645	2100	1821	2528	2342	2177	1742	1347	2252
2320	1811	2402	1716	2036	2128	2081	1855	1887	1855

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Apr 7, 1998 3:50 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Building 11 Laundry Facility [G2]

Dataset Name: 97-P274-G2
Dataset Date: Apr 7, 1998 1:32 pm
Wind File: WNDFILES\97STAR.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	1.53E-07
BREAST	1.69E-07
R MAR	1.80E-05
LUNGS	3.47E-04
THYROID	1.50E-07
ENDOST	2.27E-04
RMNDR	1.96E-06
EFFEC	5.13E-05

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	1.51E-06
INHALATION	4.97E-05
AIR IMMERSION	1.68E-12
GROUND SURFACE	3.84E-08
INTERNAL	5.12E-05
EXTERNAL	3.84E-08
TOTAL	5.12E-05

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	1.66E-05
U-235	1.43E-06
U-236	1.42E-06
U-238	1.06E-05
RA-226	4.47E-10
RA-228	7.29E-10
TH-228	3.01E-06
TH-230	1.21E-05
TH-232	6.13E-06
TH-234	1.21E-08
TOTAL	5.12E-05

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	1.57E-11
BONE	1.04E-11
THYROID	3.65E-14
BREAST	3.78E-13
LUNG	5.54E-10
STOMACH	2.32E-13
BOWEL	3.37E-13
LIVER	6.40E-13
PANCREAS	1.50E-13
URINARY	3.78E-12
OTHER	1.83E-13
TOTAL	5.86E-10

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	7.39E-12
INHALATION	5.78E-10
AIR IMMERSION	3.83E-17
GROUND SURFACE	8.91E-13
INTERNAL	5.85E-10
EXTERNAL	8.91E-13
TOTAL	5.86E-10

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	2.17E-10
U-235	1.87E-11
U-236	1.82E-11
U-238	1.39E-10
RA-226	5.76E-15
RA-228	7.31E-15
TH-228	6.04E-11
TH-230	9.87E-11
TH-232	3.45E-11
TH-234	3.72E-13
TOTAL	5.86E-10

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

Direction	Distance (m) 1336	1645	2100	1821	2528	2342	2177
N	1.9E-05	1.5E-05	1.1E-05	1.3E-05	8.6E-06	9.4E-06	1.0E-05
NNW	1.3E-05	9.8E-06	7.2E-06	8.6E-06	5.8E-06	6.3E-06	6.9E-06
NW	1.3E-05	9.6E-06	7.1E-06	8.5E-06	5.8E-06	6.3E-06	6.8E-06
WNW	1.2E-05	9.2E-06	7.0E-06	8.2E-06	5.8E-06	6.3E-06	6.8E-06
W	2.1E-05	1.6E-05	1.2E-05	1.4E-05	9.8E-06	1.1E-05	1.2E-05
WSW	2.9E-05	2.1E-05	1.5E-05	1.8E-05	1.2E-05	1.3E-05	1.4E-05
SW	1.6E-05	1.1E-05	8.1E-06	9.9E-06	6.3E-06	7.0E-06	7.7E-06
SSW	1.2E-05	9.0E-06	6.6E-06	7.9E-06	5.2E-06	5.7E-06	6.3E-06
S	1.3E-05	9.5E-06	7.0E-06	8.3E-06	5.7E-06	6.2E-06	6.7E-06
SSE	1.9E-05	1.5E-05	1.2E-05	1.4E-05	1.0E-05	1.1E-05	1.2E-05
SE	2.7E-05	2.2E-05	1.8E-05	2.0E-05	1.5E-05	1.6E-05	1.7E-05
ESE	2.9E-05	2.3E-05	1.9E-05	2.1E-05	1.6E-05	1.7E-05	1.8E-05
E	4.3E-05	3.3E-05	2.6E-05	3.0E-05	2.1E-05	2.3E-05	2.5E-05
ENE	5.1E-05	3.9E-05	2.9E-05	3.4E-05	2.3E-05	2.5E-05	2.8E-05
NE	4.6E-05	3.5E-05	2.5E-05	3.0E-05	2.0E-05	2.2E-05	2.4E-05
NNE	3.1E-05	2.3E-05	1.7E-05	2.0E-05	1.3E-05	1.5E-05	1.6E-05

Direction	Distance (m) 1742	1347	2252	2320	1811	2402	1716
N	1.4E-05	1.9E-05	9.9E-06	9.6E-06	1.3E-05	9.2E-06	1.4E-05
NNW	9.1E-06	1.3E-05	6.6E-06	6.4E-06	8.7E-06	6.1E-06	9.3E-06
NW	8.9E-06	1.2E-05	6.6E-06	6.4E-06	8.5E-06	6.1E-06	9.1E-06
WNW	8.6E-06	1.2E-05	6.6E-06	6.4E-06	8.3E-06	6.1E-06	8.8E-06
W	1.5E-05	2.1E-05	1.1E-05	1.1E-05	1.4E-05	1.0E-05	1.5E-05
WSW	2.0E-05	2.9E-05	1.4E-05	1.3E-05	1.9E-05	1.2E-05	2.0E-05
SW	1.1E-05	1.5E-05	7.4E-06	7.1E-06	1.0E-05	6.8E-06	1.1E-05
SSW	8.4E-06	1.2E-05	6.0E-06	5.8E-06	7.9E-06	5.6E-06	8.5E-06
S	8.8E-06	1.2E-05	6.5E-06	6.3E-06	8.4E-06	6.0E-06	9.0E-06
SSE	1.4E-05	1.9E-05	1.1E-05	1.1E-05	1.4E-05	1.1E-05	1.5E-05
SE	2.1E-05	2.7E-05	1.7E-05	1.6E-05	2.0E-05	1.6E-05	2.1E-05
ESE	2.2E-05	2.9E-05	1.8E-05	1.7E-05	2.1E-05	1.7E-05	2.2E-05
E	3.1E-05	4.3E-05	2.4E-05	2.3E-05	3.0E-05	2.2E-05	3.2E-05
ENE	3.6E-05	5.1E-05	2.7E-05	2.6E-05	3.5E-05	2.5E-05	3.7E-05
NE	3.2E-05	4.6E-05	2.3E-05	2.2E-05	3.1E-05	2.2E-05	3.3E-05
NNE	2.2E-05	3.1E-05	1.5E-05	1.5E-05	2.0E-05	1.4E-05	2.2E-05

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	2036	2128	2081	1855	1887	1855
N	1.1E-05	1.1E-05	1.1E-05	1.3E-05	1.2E-05	1.3E-05
NNW	7.5E-06	7.1E-06	7.3E-06	8.4E-06	8.2E-06	8.4E-06
NW	7.4E-06	7.0E-06	7.2E-06	8.3E-06	8.1E-06	8.3E-06
WNW	7.3E-06	6.9E-06	7.1E-06	8.0E-06	7.9E-06	8.0E-06
W	1.2E-05	1.2E-05	1.2E-05	1.4E-05	1.4E-05	1.4E-05
WSW	1.6E-05	1.5E-05	1.5E-05	1.8E-05	1.8E-05	1.8E-05
SW	8.5E-06	8.0E-06	8.2E-06	9.7E-06	9.4E-06	9.7E-06
SSW	6.8E-06	6.5E-06	6.6E-06	7.7E-06	7.5E-06	7.7E-06
S	7.3E-06	6.9E-06	7.1E-06	8.1E-06	8.0E-06	8.1E-06
SSE	1.2E-05	1.2E-05	1.2E-05	1.4E-05	1.3E-05	1.4E-05
SE	1.8E-05	1.8E-05	1.8E-05	2.0E-05	1.9E-05	2.0E-05
ESE	1.9E-05	1.8E-05	1.9E-05	2.1E-05	2.0E-05	2.1E-05
E	2.6E-05	2.5E-05	2.6E-05	2.9E-05	2.9E-05	2.9E-05
ENE	3.0E-05	2.8E-05	2.9E-05	3.4E-05	3.3E-05	3.4E-05
NE	2.6E-05	2.5E-05	2.6E-05	3.0E-05	2.9E-05	3.0E-05
NNE	1.8E-05	1.7E-05	1.7E-05	2.0E-05	1.9E-05	2.0E-05

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m) 1336	1645	2100	1821	2528	2342	2177
N	2.2E-10	1.7E-10	1.2E-10	1.5E-10	9.8E-11	1.1E-10	1.2E-10
NNW	1.5E-10	1.1E-10	8.1E-11	9.7E-11	6.5E-11	7.1E-11	7.8E-11
NW	1.4E-10	1.1E-10	8.1E-11	9.6E-11	6.5E-11	7.1E-11	7.7E-11
WNW	1.3E-10	1.0E-10	7.9E-11	9.3E-11	6.5E-11	7.1E-11	7.6E-11
W	2.4E-10	1.8E-10	1.4E-10	1.6E-10	1.1E-10	1.2E-10	1.3E-10
WSW	3.3E-10	2.4E-10	1.7E-10	2.1E-10	1.3E-10	1.5E-10	1.6E-10
SW	1.8E-10	1.3E-10	9.2E-11	1.1E-10	7.1E-11	7.9E-11	8.7E-11
SSW	1.4E-10	1.0E-10	7.4E-11	8.9E-11	5.9E-11	6.4E-11	7.1E-11
S	1.4E-10	1.1E-10	7.9E-11	9.4E-11	6.4E-11	7.0E-11	7.6E-11
SSE	2.2E-10	1.7E-10	1.4E-10	1.6E-10	1.2E-10	1.2E-10	1.3E-10
SE	3.1E-10	2.5E-10	2.0E-10	2.3E-10	1.8E-10	1.9E-10	2.0E-10
ESE	3.3E-10	2.6E-10	2.1E-10	2.4E-10	1.8E-10	2.0E-10	2.1E-10
E	4.9E-10	3.8E-10	2.9E-10	3.4E-10	2.4E-10	2.6E-10	2.8E-10
ENE	5.9E-10	4.5E-10	3.3E-10	3.9E-10	2.7E-10	2.9E-10	3.2E-10
NE	5.3E-10	4.0E-10	2.9E-10	3.5E-10	2.3E-10	2.5E-10	2.8E-10
NNE	3.5E-10	2.6E-10	1.9E-10	2.3E-10	1.5E-10	1.7E-10	1.8E-10

Direction	Distance (m) 1742	1347	2252	2320	1811	2402	1716
N	1.5E-10	2.2E-10	1.1E-10	1.1E-10	1.5E-10	1.0E-10	1.6E-10
NNW	1.0E-10	1.5E-10	7.4E-11	7.2E-11	9.8E-11	6.9E-11	1.1E-10
NW	1.0E-10	1.4E-10	7.4E-11	7.2E-11	9.6E-11	6.9E-11	1.0E-10
WNW	9.8E-11	1.3E-10	7.4E-11	7.2E-11	9.3E-11	6.9E-11	9.9E-11
W	1.7E-10	2.4E-10	1.3E-10	1.2E-10	1.6E-10	1.2E-10	1.7E-10
WSW	2.2E-10	3.3E-10	1.5E-10	1.5E-10	2.1E-10	1.4E-10	2.3E-10
SW	1.2E-10	1.8E-10	8.3E-11	8.0E-11	1.1E-10	7.6E-11	1.2E-10
SSW	9.5E-11	1.4E-10	6.8E-11	6.5E-11	9.0E-11	6.2E-11	9.7E-11
S	1.0E-10	1.4E-10	7.3E-11	7.0E-11	9.5E-11	6.8E-11	1.0E-10
SSE	1.6E-10	2.2E-10	1.3E-10	1.3E-10	1.6E-10	1.2E-10	1.7E-10
SE	2.4E-10	3.1E-10	1.9E-10	1.9E-10	2.3E-10	1.8E-10	2.4E-10
ESE	2.5E-10	3.3E-10	2.0E-10	2.0E-10	2.4E-10	1.9E-10	2.5E-10
E	3.6E-10	4.9E-10	2.7E-10	2.6E-10	3.4E-10	2.6E-10	3.6E-10
ENE	4.1E-10	5.8E-10	3.0E-10	2.9E-10	3.9E-10	2.8E-10	4.2E-10
NE	3.7E-10	5.2E-10	2.7E-10	2.6E-10	3.5E-10	2.5E-10	3.7E-10
NNE	2.5E-10	3.5E-10	1.8E-10	1.7E-10	2.3E-10	1.6E-10	2.5E-10

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INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	2036	2128	2081	1855	1887	1855
N	1.3E-10	1.2E-10	1.2E-10	1.4E-10	1.4E-10	1.4E-10
NNW	8.4E-11	8.0E-11	8.2E-11	9.5E-11	9.3E-11	9.5E-11
NW	8.4E-11	7.9E-11	8.1E-11	9.4E-11	9.2E-11	9.4E-11
WNW	8.2E-11	7.8E-11	8.0E-11	9.1E-11	8.9E-11	9.1E-11
W	1.4E-10	1.3E-10	1.4E-10	1.6E-10	1.6E-10	1.6E-10
WSW	1.8E-10	1.7E-10	1.7E-10	2.0E-10	2.0E-10	2.0E-10
SW	9.6E-11	9.0E-11	9.3E-11	1.1E-10	1.1E-10	1.1E-10
SSW	7.7E-11	7.3E-11	7.5E-11	8.7E-11	8.5E-11	8.7E-11
S	8.2E-11	7.8E-11	8.0E-11	9.2E-11	9.0E-11	9.2E-11
SSE	1.4E-10	1.4E-10	1.4E-10	1.5E-10	1.5E-10	1.5E-10
SE	2.1E-10	2.0E-10	2.0E-10	2.2E-10	2.2E-10	2.2E-10
ESE	2.2E-10	2.1E-10	2.1E-10	2.4E-10	2.3E-10	2.4E-10
E	3.0E-10	2.9E-10	3.0E-10	3.3E-10	3.3E-10	3.3E-10
ENE	3.4E-10	3.2E-10	3.3E-10	3.8E-10	3.8E-10	3.8E-10
NE	3.0E-10	2.8E-10	2.9E-10	3.4E-10	3.3E-10	3.4E-10
NNE	2.0E-10	1.9E-10	1.9E-10	2.3E-10	2.2E-10	2.3E-10

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Apr 7, 1998 3:47 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

3.96E-04

At This Location: 1017 Meters East Northeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Building 11 Respirator Washing Facility [G1]

Dataset Name: 97-P284-G1
Dataset Date: Apr 7, 1998 1:20 pm
Wind File: WNDFILES\97STAR.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 1017 Meters East Northeast
Lifetime Fatal Cancer Risk: 5.12E-09

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	8.21E-07
BREAST	9.27E-07
R MAR	4.45E-05
LUNGS	3.06E-03
THYROID	8.02E-07
ENDOST	5.81E-04
RMNDR	2.05E-05
EFFEC	3.96E-04

RADIONUCLIDE EMISSIONS DURING THE YEAR 1997

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	0.30	6.9E-07	6.9E-07
U-235	Y	1.00	3.7E-08	3.7E-08
U-236	Y	1.00	2.7E-08	2.7E-08
U-238	Y	0.30	7.8E-07	7.8E-07
RA-226	W	0.30	4.9E-10	4.9E-10
RA-228	W	0.30	2.0E-09	2.0E-09
TH-228	Y	0.30	2.1E-08	2.1E-08
TH-230	Y	0.30	6.2E-08	6.2E-08
TH-232	Y	0.30	3.3E-09	3.3E-09
TH-234	Y	0.30	3.1E-06	3.1E-06

SITE INFORMATION

Temperature: 11 degrees C
Precipitation: 102 cm/y
Mixing Height: 950 m

SOURCE INFORMATION

Source Number:	1
Stack Height (m):	4.88
Diameter (m):	0.20
Plume Rise Momentum (m/s): (Exit Velocity)	2.91E+01

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

1337	1301	2043	1677	1375	1017	1061	1106	1137	1261
1252	1238	1137	1132	1735	1264	1094	1095	1724	1729

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C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Apr 7, 1998 3:47 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Building 11 Respirator Washing Facility [G1]

Dataset Name: 97-P284-G1
Dataset Date: Apr 7, 1998 1:20 pm
Wind File: WNDFILES\97STAR.WND

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ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	8.21E-07
BREAST	9.27E-07
R MAR	4.45E-05
LUNGS	3.06E-03
THYROID	8.02E-07
ENDOST	5.81E-04
RMNDR	2.05E-05
EFFEC	3.96E-04

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	1.44E-05
INHALATION	3.82E-04
AIR IMMERSION	1.88E-11
GROUND SURFACE	1.50E-07
INTERNAL	3.96E-04
EXTERNAL	1.50E-07
TOTAL	3.96E-04

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	1.74E-04
U-235	5.20E-06
U-236	3.80E-06
U-238	1.73E-04
RA-226	1.31E-08
RA-228	1.94E-08
TH-228	9.67E-06
TH-230	2.77E-05
TH-232	2.14E-06
TH-234	3.38E-07
TOTAL	3.96E-04

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	4.23E-11
BONE	2.79E-11
THYROID	1.80E-13
BREAST	2.01E-12
LUNG	4.99E-09
STOMACH	1.36E-12
BOWEL	3.51E-12
LIVER	1.89E-12
PANCREAS	7.99E-13
URINARY	4.23E-11
OTHER	9.77E-13
TOTAL	5.12E-09

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	7.66E-11
INHALATION	5.04E-09
AIR IMMERSION	4.19E-16
GROUND SURFACE	3.46E-12
INTERNAL	5.11E-09
EXTERNAL	3.46E-12
TOTAL	5.12E-09

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NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	2.27E-09
U-235	6.80E-11
U-236	4.86E-11
U-238	2.28E-09
RA-226	2.07E-13
RA-228	2.23E-13
TH-228	1.95E-10
TH-230	2.32E-10
TH-232	1.22E-11
TH-234	1.33E-11
TOTAL	5.12E-09

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	1337	1301	2043	1677	1375	1017	1061
N	1.0E-04	1.1E-04	6.2E-05	7.9E-05	1.0E-04	1.5E-04	1.4E-04
NNW	7.1E-05	7.3E-05	4.2E-05	5.3E-05	6.8E-05	1.0E-04	9.6E-05
NW	6.9E-05	7.2E-05	4.2E-05	5.3E-05	6.7E-05	9.8E-05	9.3E-05
WNW	6.6E-05	6.8E-05	4.2E-05	5.1E-05	6.4E-05	9.3E-05	8.8E-05
W	1.2E-04	1.2E-04	7.0E-05	8.7E-05	1.1E-04	1.7E-04	1.6E-04
WSW	1.5E-04	1.6E-04	8.4E-05	1.1E-04	1.5E-04	2.3E-04	2.2E-04
SW	8.3E-05	8.7E-05	4.6E-05	6.0E-05	8.0E-05	1.3E-04	1.2E-04
SSW	6.5E-05	6.8E-05	3.8E-05	4.8E-05	6.3E-05	9.6E-05	9.1E-05
S	6.8E-05	7.1E-05	4.1E-05	5.1E-05	6.6E-05	9.9E-05	9.3E-05
SSE	1.1E-04	1.1E-04	7.2E-05	8.5E-05	1.0E-04	1.5E-04	1.4E-04
SE	1.5E-04	1.6E-04	1.1E-04	1.2E-04	1.5E-04	2.1E-04	2.0E-04
ESE	1.6E-04	1.7E-04	1.1E-04	1.3E-04	1.6E-04	2.2E-04	2.1E-04
E	2.4E-04	2.4E-04	1.5E-04	1.8E-04	2.3E-04	3.3E-04	3.2E-04
ENE	2.8E-04	2.9E-04	1.7E-04	2.1E-04	2.7E-04	4.0E-04	3.7E-04
NE	2.5E-04	2.6E-04	1.5E-04	1.8E-04	2.4E-04	3.6E-04	3.4E-04
NNE	1.7E-04	1.7E-04	9.6E-05	1.2E-04	1.6E-04	2.4E-04	2.3E-04

	Distance (m)						
Direction	1106	1137	1261	1252	1238	1137	1132
N	1.3E-04	1.3E-04	1.1E-04	1.1E-04	1.2E-04	1.3E-04	1.3E-04
NNW	9.1E-05	8.8E-05	7.6E-05	7.7E-05	7.8E-05	8.8E-05	8.8E-05
NW	8.8E-05	8.5E-05	7.4E-05	7.5E-05	7.6E-05	8.5E-05	8.5E-05
WNW	8.3E-05	8.1E-05	7.1E-05	7.2E-05	7.3E-05	8.1E-05	8.1E-05
W	1.5E-04	1.4E-04	1.2E-04	1.3E-04	1.3E-04	1.4E-04	1.4E-04
WSW	2.1E-04	2.0E-04	1.7E-04	1.7E-04	1.7E-04	2.0E-04	2.0E-04
SW	1.1E-04	1.1E-04	9.1E-05	9.2E-05	9.3E-05	1.1E-04	1.1E-04
SSW	8.5E-05	8.2E-05	7.1E-05	7.1E-05	7.3E-05	8.2E-05	8.2E-05
S	8.8E-05	8.5E-05	7.4E-05	7.4E-05	7.6E-05	8.5E-05	8.5E-05
SSE	1.3E-04	1.3E-04	1.1E-04	1.2E-04	1.2E-04	1.3E-04	1.3E-04
SE	1.9E-04	1.8E-04	1.6E-04	1.6E-04	1.7E-04	1.8E-04	1.8E-04
ESE	2.0E-04	2.0E-04	1.7E-04	1.7E-04	1.8E-04	2.0E-04	2.0E-04
E	3.0E-04	2.9E-04	2.5E-04	2.6E-04	2.6E-04	2.9E-04	2.9E-04
ENE	3.5E-04	3.4E-04	3.0E-04	3.0E-04	3.1E-04	3.4E-04	3.4E-04
NE	3.2E-04	3.1E-04	2.7E-04	2.7E-04	2.7E-04	3.1E-04	3.1E-04
NNE	2.2E-04	2.1E-04	1.8E-04	1.8E-04	1.8E-04	2.1E-04	2.1E-04

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INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1735	1264	1094	1095	1724	1729
N	7.5E-05	1.1E-04	1.4E-04	1.4E-04	7.6E-05	7.6E-05
NNW	5.1E-05	7.6E-05	9.3E-05	9.2E-05	5.1E-05	5.1E-05
NW	5.0E-05	7.4E-05	8.9E-05	8.9E-05	5.1E-05	5.1E-05
WNW	4.9E-05	7.1E-05	8.4E-05	8.4E-05	5.0E-05	5.0E-05
W	8.4E-05	1.2E-04	1.5E-04	1.5E-04	8.5E-05	8.4E-05
WSW	1.1E-04	1.7E-04	2.1E-04	2.1E-04	1.1E-04	1.1E-04
SW	5.8E-05	9.0E-05	1.1E-04	1.1E-04	5.8E-05	5.8E-05
SSW	4.6E-05	7.1E-05	8.7E-05	8.6E-05	4.7E-05	4.7E-05
S	4.9E-05	7.3E-05	8.9E-05	8.9E-05	5.0E-05	5.0E-05
SSE	8.3E-05	1.1E-04	1.4E-04	1.4E-04	8.3E-05	8.3E-05
SE	1.2E-04	1.6E-04	1.9E-04	1.9E-04	1.2E-04	1.2E-04
ESE	1.3E-04	1.7E-04	2.0E-04	2.0E-04	1.3E-04	1.3E-04
E	1.8E-04	2.5E-04	3.0E-04	3.0E-04	1.8E-04	1.8E-04
ENE	2.0E-04	3.0E-04	3.6E-04	3.6E-04	2.0E-04	2.0E-04
NE	1.8E-04	2.7E-04	3.2E-04	3.2E-04	1.8E-04	1.8E-04
NNE	1.2E-04	1.8E-04	2.2E-04	2.2E-04	1.2E-04	1.2E-04

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m) 1337	1301	2043	1677	1375	1017	1061
N	1.3E-09	1.4E-09	7.9E-10	1.0E-09	1.3E-09	1.9E-09	1.8E-09
NNW	9.0E-10	9.3E-10	5.3E-10	6.7E-10	8.7E-10	1.3E-09	1.2E-09
NW	8.8E-10	9.1E-10	5.2E-10	6.6E-10	8.5E-10	1.2E-09	1.2E-09
WNW	8.4E-10	8.7E-10	5.2E-10	6.5E-10	8.1E-10	1.2E-09	1.1E-09
W	1.5E-09	1.5E-09	8.9E-10	1.1E-09	1.4E-09	2.2E-09	2.0E-09
WSW	2.0E-09	2.1E-09	1.1E-09	1.4E-09	1.9E-09	3.0E-09	2.8E-09
SW	1.1E-09	1.1E-09	5.8E-10	7.7E-10	1.0E-09	1.6E-09	1.5E-09
SSW	8.3E-10	8.6E-10	4.8E-10	6.1E-10	8.0E-10	1.2E-09	1.2E-09
S	8.7E-10	9.0E-10	5.2E-10	6.5E-10	8.3E-10	1.3E-09	1.2E-09
SSE	1.4E-09	1.4E-09	9.1E-10	1.1E-09	1.3E-09	1.9E-09	1.8E-09
SE	2.0E-09	2.0E-09	1.4E-09	1.6E-09	1.9E-09	2.7E-09	2.5E-09
ESE	2.1E-09	2.1E-09	1.4E-09	1.7E-09	2.0E-09	2.9E-09	2.7E-09
E	3.0E-09	3.1E-09	1.9E-09	2.4E-09	2.9E-09	4.3E-09	4.1E-09
ENE	3.6E-09	3.7E-09	2.1E-09	2.7E-09	3.4E-09	5.1E-09	4.8E-09
NE	3.2E-09	3.3E-09	1.9E-09	2.4E-09	3.1E-09	4.6E-09	4.4E-09
NNE	2.1E-09	2.2E-09	1.2E-09	1.6E-09	2.1E-09	3.1E-09	3.0E-09

Direction	Distance (m) 1106	1137	1261	1252	1238	1137	1132
N	1.7E-09	1.7E-09	1.4E-09	1.5E-09	1.5E-09	1.7E-09	1.7E-09
NNW	1.2E-09	1.1E-09	9.7E-10	9.8E-10	1.0E-09	1.1E-09	1.1E-09
NW	1.1E-09	1.1E-09	9.5E-10	9.6E-10	9.7E-10	1.1E-09	1.1E-09
WNW	1.1E-09	1.0E-09	9.0E-10	9.1E-10	9.2E-10	1.0E-09	1.0E-09
W	1.9E-09	1.8E-09	1.6E-09	1.6E-09	1.6E-09	1.8E-09	1.9E-09
WSW	2.6E-09	2.5E-09	2.2E-09	2.2E-09	2.2E-09	2.5E-09	2.6E-09
SW	1.4E-09	1.4E-09	1.2E-09	1.2E-09	1.2E-09	1.4E-09	1.4E-09
SSW	1.1E-09	1.0E-09	9.0E-10	9.1E-10	9.2E-10	1.0E-09	1.1E-09
S	1.1E-09	1.1E-09	9.4E-10	9.5E-10	9.6E-10	1.1E-09	1.1E-09
SSE	1.7E-09	1.7E-09	1.5E-09	1.5E-09	1.5E-09	1.7E-09	1.7E-09
SE	2.4E-09	2.3E-09	2.1E-09	2.1E-09	2.1E-09	2.3E-09	2.4E-09
ESE	2.6E-09	2.5E-09	2.2E-09	2.2E-09	2.3E-09	2.5E-09	2.5E-09
E	3.9E-09	3.7E-09	3.3E-09	3.3E-09	3.3E-09	3.7E-09	3.7E-09
ENE	4.6E-09	4.4E-09	3.9E-09	3.9E-09	3.9E-09	4.4E-09	4.4E-09
NE	4.1E-09	4.0E-09	3.5E-09	3.5E-09	3.5E-09	4.0E-09	4.0E-09
NNE	2.8E-09	2.7E-09	2.3E-09	2.3E-09	2.4E-09	2.7E-09	2.7E-09

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INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1735	1264	1094	1095	1724	1729
N	9.6E-10	1.4E-09	1.7E-09	1.7E-09	9.7E-10	9.6E-10
NNW	6.4E-10	9.7E-10	1.2E-09	1.2E-09	6.5E-10	6.4E-10
NW	6.4E-10	9.4E-10	1.1E-09	1.1E-09	6.4E-10	6.4E-10
WNW	6.2E-10	9.0E-10	1.1E-09	1.1E-09	6.3E-10	6.3E-10
W	1.1E-09	1.6E-09	1.9E-09	1.9E-09	1.1E-09	1.1E-09
WSW	1.4E-09	2.2E-09	2.7E-09	2.7E-09	1.4E-09	1.4E-09
SW	7.3E-10	1.2E-09	1.4E-09	1.4E-09	7.4E-10	7.3E-10
SSW	5.8E-10	9.0E-10	1.1E-09	1.1E-09	5.9E-10	5.9E-10
S	6.2E-10	9.3E-10	1.1E-09	1.1E-09	6.3E-10	6.3E-10
SSE	1.1E-09	1.5E-09	1.7E-09	1.7E-09	1.1E-09	1.1E-09
SE	1.5E-09	2.1E-09	2.5E-09	2.4E-09	1.5E-09	1.5E-09
ESE	1.6E-09	2.2E-09	2.6E-09	2.6E-09	1.6E-09	1.6E-09
E	2.3E-09	3.3E-09	3.9E-09	3.9E-09	2.3E-09	2.3E-09
ENE	2.6E-09	3.8E-09	4.6E-09	4.6E-09	2.6E-09	2.6E-09
NE	2.3E-09	3.4E-09	4.2E-09	4.2E-09	2.3E-09	2.3E-09
NNE	1.5E-09	2.3E-09	2.8E-09	2.8E-09	1.5E-09	1.5E-09

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C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Apr 7, 1998 3:47 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

2.78E-04

At This Location: 1330 Meters East Northeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Building 11 Respirator Washing Facility [G2]

Dataset Name: 97-P284-G2
Dataset Date: Apr 7, 1998 1:21 pm
Wind File: WNDFILES\97STAR.WND

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MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 1330 Meters East Northeast
Lifetime Fatal Cancer Risk: 3.59E-09

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	5.78E-07
BREAST	6.53E-07
R MAR	3.12E-05
LUNGS	2.15E-03
THYROID	5.64E-07
ENDOST	4.08E-04
RMNDR	1.43E-05
EFFEC	2.78E-04

RADIONUCLIDE EMISSIONS DURING THE YEAR 1997

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	0.30	6.9E-07	6.9E-07
U-235	Y	1.00	3.7E-08	3.7E-08
U-236	Y	1.00	2.7E-08	2.7E-08
U-238	Y	0.30	7.8E-07	7.8E-07
RA-226	W	0.30	4.9E-10	4.9E-10
RA-228	W	0.30	2.0E-09	2.0E-09
TH-228	Y	0.30	2.1E-08	2.1E-08
TH-230	Y	0.30	6.2E-08	6.2E-08
TH-232	Y	0.30	3.3E-09	3.3E-09
TH-234	Y	0.30	3.1E-06	3.1E-06

SITE INFORMATION

Temperature: 11 degrees C
Precipitation: 102 cm/y
Mixing Height: 950 m

SOURCE INFORMATION

Source Number:	1
Stack Height (m):	4.88
Diameter (m):	0.20
Plume Rise Momentum (m/s): (Exit Velocity)	2.91E+01

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

1330	1639	2098	1821	2526	2342	2181	1736	1351	2250
2319	1805	2402	1712	2031	2123	2076	1858	1890	1850

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Apr 7, 1998 3:47 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Building 11 Respirator Washing Facility [G2]

Dataset Name: 97-P284-G2
Dataset Date: Apr 7, 1998 1:21 pm
Wind File: WNDFILES\97STAR.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	5.78E-07
BREAST	6.53E-07
R MAR	3.12E-05
LUNGS	2.15E-03
THYROID	5.64E-07
ENDOST	4.08E-04
RMNDR	1.43E-05
EFFEC	2.78E-04

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	1.01E-05
INHALATION	2.68E-04
AIR IMMERSION	1.32E-11
GROUND SURFACE	1.07E-07
INTERNAL	2.78E-04
EXTERNAL	1.07E-07
TOTAL	2.78E-04

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	1.22E-04
U-235	3.65E-06
U-236	2.67E-06
U-238	1.22E-04
RA-226	9.22E-09
RA-228	1.36E-08
TH-228	6.79E-06
TH-230	1.94E-05
TH-232	1.51E-06
TH-234	2.37E-07
TOTAL	2.78E-04

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	2.97E-11
BONE	1.96E-11
THYROID	1.27E-13
BREAST	1.42E-12
LUNG	3.51E-09
STOMACH	9.59E-13
BOWEL	2.47E-12
LIVER	1.33E-12
PANCREAS	5.63E-13
URINARY	2.97E-11
OTHER	6.88E-13
TOTAL	3.59E-09

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	5.36E-11
INHALATION	3.54E-09
AIR IMMERSION	2.94E-16
GROUND SURFACE	2.47E-12
INTERNAL	3.59E-09
EXTERNAL	2.47E-12
TOTAL	3.59E-09

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	1.59E-09
U-235	4.78E-11
U-236	3.41E-11
U-238	1.60E-09
RA-226	1.45E-13
RA-228	1.57E-13
TH-228	1.37E-10
TH-230	1.63E-10
TH-232	8.57E-12
TH-234	9.33E-12
TOTAL	3.59E-09

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	1330	1639	2098	1821	2526	2342	2181
N	1.0E-04	8.0E-05	6.0E-05	7.0E-05	4.8E-05	5.3E-05	5.7E-05
NNW	7.0E-05	5.4E-05	4.0E-05	4.7E-05	3.2E-05	3.5E-05	3.8E-05
NW	6.9E-05	5.3E-05	4.0E-05	4.7E-05	3.2E-05	3.5E-05	3.8E-05
WNW	6.6E-05	5.2E-05	4.0E-05	4.6E-05	3.3E-05	3.6E-05	3.8E-05
W	1.2E-04	8.9E-05	6.7E-05	7.9E-05	5.5E-05	5.9E-05	6.4E-05
WSW	1.6E-04	1.1E-04	8.1E-05	9.8E-05	6.2E-05	6.9E-05	7.6E-05
SW	8.3E-05	6.2E-05	4.4E-05	5.3E-05	3.5E-05	3.8E-05	4.2E-05
SSW	6.5E-05	4.9E-05	3.6E-05	4.3E-05	2.9E-05	3.2E-05	3.4E-05
S	6.8E-05	5.2E-05	3.9E-05	4.6E-05	3.2E-05	3.5E-05	3.8E-05
SSE	1.1E-04	8.6E-05	6.9E-05	7.8E-05	5.9E-05	6.3E-05	6.7E-05
SE	1.5E-04	1.3E-04	1.0E-04	1.1E-04	9.0E-05	9.6E-05	1.0E-04
ESE	1.6E-04	1.3E-04	1.1E-04	1.2E-04	9.5E-05	1.0E-04	1.1E-04
E	2.4E-04	1.9E-04	1.5E-04	1.7E-04	1.2E-04	1.3E-04	1.4E-04
ENE	2.8E-04	2.1E-04	1.6E-04	1.9E-04	1.3E-04	1.4E-04	1.5E-04
NE	2.5E-04	1.9E-04	1.4E-04	1.7E-04	1.1E-04	1.2E-04	1.3E-04
NNE	1.7E-04	1.3E-04	9.2E-05	1.1E-04	7.4E-05	8.1E-05	8.8E-05

	Distance (m)						
Direction	1736	1351	2250	2319	1805	2402	1712
N	7.5E-05	1.0E-04	5.5E-05	5.3E-05	7.1E-05	5.1E-05	7.6E-05
NNW	5.0E-05	6.9E-05	3.7E-05	3.5E-05	4.8E-05	3.4E-05	5.1E-05
NW	5.0E-05	6.7E-05	3.7E-05	3.6E-05	4.7E-05	3.4E-05	5.0E-05
WNW	4.9E-05	6.5E-05	3.7E-05	3.6E-05	4.7E-05	3.5E-05	4.9E-05
W	8.3E-05	1.1E-04	6.2E-05	6.0E-05	7.9E-05	5.8E-05	8.4E-05
WSW	1.1E-04	1.5E-04	7.3E-05	7.0E-05	1.0E-04	6.7E-05	1.1E-04
SW	5.7E-05	8.1E-05	4.0E-05	3.9E-05	5.4E-05	3.7E-05	5.8E-05
SSW	4.6E-05	6.4E-05	3.3E-05	3.2E-05	4.3E-05	3.1E-05	4.6E-05
S	4.9E-05	6.7E-05	3.6E-05	3.5E-05	4.6E-05	3.4E-05	4.9E-05
SSE	8.2E-05	1.1E-04	6.5E-05	6.4E-05	7.9E-05	6.2E-05	8.3E-05
SE	1.2E-04	1.5E-04	9.8E-05	9.6E-05	1.2E-04	9.4E-05	1.2E-04
ESE	1.3E-04	1.6E-04	1.0E-04	1.0E-04	1.2E-04	9.9E-05	1.3E-04
E	1.8E-04	2.3E-04	1.4E-04	1.3E-04	1.7E-04	1.3E-04	1.8E-04
ENE	2.0E-04	2.7E-04	1.5E-04	1.4E-04	1.9E-04	1.4E-04	2.0E-04
NE	1.8E-04	2.4E-04	1.3E-04	1.2E-04	1.7E-04	1.2E-04	1.8E-04
NNE	1.2E-04	1.6E-04	8.5E-05	8.2E-05	1.1E-04	7.8E-05	1.2E-04

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INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	2031	2123	2076	1858	1890	1850
N	6.2E-05	5.9E-05	6.0E-05	6.9E-05	6.7E-05	6.9E-05
NNW	4.1E-05	3.9E-05	4.0E-05	4.6E-05	4.5E-05	4.6E-05
NW	4.1E-05	3.9E-05	4.0E-05	4.6E-05	4.5E-05	4.6E-05
WNW	4.1E-05	4.0E-05	4.0E-05	4.5E-05	4.4E-05	4.5E-05
W	6.9E-05	6.6E-05	6.8E-05	7.7E-05	7.5E-05	7.7E-05
WSW	8.4E-05	7.9E-05	8.2E-05	9.6E-05	9.3E-05	9.6E-05
SW	4.6E-05	4.3E-05	4.5E-05	5.2E-05	5.1E-05	5.2E-05
SSW	3.7E-05	3.6E-05	3.7E-05	4.2E-05	4.1E-05	4.2E-05
S	4.1E-05	3.9E-05	4.0E-05	4.5E-05	4.4E-05	4.5E-05
SSE	7.1E-05	6.9E-05	7.0E-05	7.7E-05	7.6E-05	7.7E-05
SE	1.1E-04	1.0E-04	1.0E-04	1.1E-04	1.1E-04	1.1E-04
ESE	1.1E-04	1.1E-04	1.1E-04	1.2E-04	1.2E-04	1.2E-04
E	1.5E-04	1.4E-04	1.5E-04	1.6E-04	1.6E-04	1.7E-04
ENE	1.7E-04	1.6E-04	1.6E-04	1.8E-04	1.8E-04	1.9E-04
NE	1.5E-04	1.4E-04	1.4E-04	1.6E-04	1.6E-04	1.6E-04
NNE	9.6E-05	9.1E-05	9.4E-05	1.1E-04	1.1E-04	1.1E-04

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m) 1330	1639	2098	1821	2526	2342	2181
N	1.3E-09	1.0E-09	7.6E-10	9.0E-10	6.1E-10	6.7E-10	7.3E-10
NNW	9.0E-10	6.9E-10	5.0E-10	6.0E-10	4.0E-10	4.4E-10	4.8E-10
NW	8.8E-10	6.8E-10	5.0E-10	6.0E-10	4.1E-10	4.4E-10	4.8E-10
WNW	8.4E-10	6.6E-10	5.1E-10	5.9E-10	4.2E-10	4.5E-10	4.9E-10
W	1.5E-09	1.1E-09	8.6E-10	1.0E-09	7.0E-10	7.6E-10	8.2E-10
WSW	2.0E-09	1.5E-09	1.0E-09	1.3E-09	7.9E-10	8.8E-10	9.8E-10
SW	1.1E-09	7.9E-10	5.6E-10	6.8E-10	4.4E-10	4.8E-10	5.3E-10
SSW	8.3E-10	6.2E-10	4.6E-10	5.4E-10	3.6E-10	4.0E-10	4.3E-10
S	8.7E-10	6.6E-10	5.0E-10	5.8E-10	4.0E-10	4.4E-10	4.8E-10
SSE	1.4E-09	1.1E-09	8.9E-10	1.0E-09	7.5E-10	8.1E-10	8.6E-10
SE	2.0E-09	1.6E-09	1.3E-09	1.5E-09	1.2E-09	1.2E-09	1.3E-09
ESE	2.1E-09	1.7E-09	1.4E-09	1.6E-09	1.2E-09	1.3E-09	1.4E-09
E	3.1E-09	2.4E-09	1.9E-09	2.2E-09	1.6E-09	1.7E-09	1.8E-09
ENE	3.6E-09	2.8E-09	2.1E-09	2.4E-09	1.7E-09	1.8E-09	2.0E-09
NE	3.2E-09	2.4E-09	1.8E-09	2.1E-09	1.4E-09	1.6E-09	1.7E-09
NNE	2.1E-09	1.6E-09	1.2E-09	1.4E-09	9.4E-10	1.0E-09	1.1E-09

Direction	Distance (m) 1736	1351	2250	2319	1805	2402	1712
N	9.5E-10	1.3E-09	7.0E-10	6.8E-10	9.1E-10	6.5E-10	9.7E-10
NNW	6.4E-10	8.8E-10	4.6E-10	4.5E-10	6.1E-10	4.3E-10	6.5E-10
NW	6.3E-10	8.6E-10	4.7E-10	4.5E-10	6.0E-10	4.3E-10	6.4E-10
WNW	6.2E-10	8.3E-10	4.7E-10	4.6E-10	5.9E-10	4.4E-10	6.3E-10
W	1.1E-09	1.5E-09	7.9E-10	7.7E-10	1.0E-09	7.4E-10	1.1E-09
WSW	1.4E-09	2.0E-09	9.4E-10	9.0E-10	1.3E-09	8.5E-10	1.4E-09
SW	7.3E-10	1.0E-09	5.1E-10	4.9E-10	6.9E-10	4.7E-10	7.4E-10
SSW	5.8E-10	8.1E-10	4.2E-10	4.0E-10	5.5E-10	3.9E-10	5.9E-10
S	6.2E-10	8.5E-10	4.6E-10	4.4E-10	5.9E-10	4.3E-10	6.3E-10
SSE	1.0E-09	1.4E-09	8.3E-10	8.1E-10	1.0E-09	7.9E-10	1.1E-09
SE	1.5E-09	1.9E-09	1.3E-09	1.2E-09	1.5E-09	1.2E-09	1.5E-09
ESE	1.6E-09	2.1E-09	1.3E-09	1.3E-09	1.6E-09	1.3E-09	1.6E-09
E	2.3E-09	3.0E-09	1.8E-09	1.7E-09	2.2E-09	1.6E-09	2.3E-09
ENE	2.6E-09	3.5E-09	1.9E-09	1.8E-09	2.5E-09	1.8E-09	2.6E-09
NE	2.3E-09	3.1E-09	1.7E-09	1.6E-09	2.2E-09	1.5E-09	2.3E-09
NNE	1.5E-09	2.1E-09	1.1E-09	1.0E-09	1.4E-09	1.0E-09	1.5E-09

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INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	2031	2123	2076	1858	1890	1850
N	7.9E-10	7.5E-10	7.7E-10	8.8E-10	8.6E-10	8.8E-10
NNW	5.2E-10	5.0E-10	5.1E-10	5.9E-10	5.7E-10	5.9E-10
NW	5.2E-10	5.0E-10	5.1E-10	5.8E-10	5.7E-10	5.9E-10
WNW	5.2E-10	5.0E-10	5.1E-10	5.8E-10	5.7E-10	5.8E-10
W	8.9E-10	8.5E-10	8.7E-10	9.8E-10	9.6E-10	9.9E-10
WSW	1.1E-09	1.0E-09	1.0E-09	1.2E-09	1.2E-09	1.2E-09
SW	5.8E-10	5.5E-10	5.7E-10	6.6E-10	6.4E-10	6.6E-10
SSW	4.7E-10	4.5E-10	4.6E-10	5.3E-10	5.2E-10	5.3E-10
S	5.2E-10	4.9E-10	5.0E-10	5.7E-10	5.6E-10	5.7E-10
SSE	9.1E-10	8.8E-10	8.9E-10	9.9E-10	9.7E-10	9.9E-10
SE	1.4E-09	1.3E-09	1.3E-09	1.5E-09	1.4E-09	1.5E-09
ESE	1.4E-09	1.4E-09	1.4E-09	1.5E-09	1.5E-09	1.5E-09
E	1.9E-09	1.9E-09	1.9E-09	2.1E-09	2.1E-09	2.1E-09
ENE	2.1E-09	2.0E-09	2.1E-09	2.4E-09	2.3E-09	2.4E-09
NE	1.9E-09	1.8E-09	1.8E-09	2.1E-09	2.0E-09	2.1E-09
NNE	1.2E-09	1.2E-09	1.2E-09	1.4E-09	1.4E-09	1.4E-09

C A P 8.8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Apr 7, 1998 3:51 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

4.44E-02

At This Location: 921 Meters East Northeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Building 15 Perchloric Hood Stacks [G1]

Dataset Name: 97-Z003-G1
Dataset Date: Apr 7, 1998 1:24 pm
Wind File: WNDFILES\97STAR.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 921 Meters East Northeast
Lifetime Fatal Cancer Risk: 5.65E-07

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	1.36E-04
BREAST	1.54E-04
R MAR	6.05E-03
LUNGS	3.35E-01
THYROID	1.33E-04
ENDOST	8.00E-02
RMNDR	3.51E-03
EFFEC	4.44E-02

RADIONUCLIDE EMISSIONS DURING THE YEAR 1997

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	1.00	8.7E-05	8.7E-05
U-235	Y	1.00	4.6E-06	4.6E-06
U-236	Y	1.00	3.4E-06	3.4E-06
U-238	Y	1.00	9.7E-05	9.7E-05
RA-226	W	1.00	6.2E-08	6.2E-08
RA-228	W	1.00	2.5E-07	2.5E-07
TH-228	Y	1.00	2.6E-06	2.6E-06
TH-230	Y	1.00	7.7E-06	7.7E-06
TH-232	Y	1.00	4.1E-07	4.1E-07
TH-234	Y	1.00	3.8E-04	3.8E-04

SITE INFORMATION

Temperature: 11 degrees C
Precipitation: 102 cm/y
Mixing Height: 950 m

SOURCE INFORMATION

Source Number: 1

Stack Height (m): 5.94
Diameter (m): 0.41

Plume Rise
Momentum (m/s): 5.46E+00
(Exit Velocity)

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

1363	1317	2008	1617	1305	921	979	1035	1068	1204
1199	1207	1133	1135	1763	1317	1182	1186	1811	1796

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C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Apr 7, 1998 3:51 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Building 15 Perchloric Hood Stacks [G1]

Dataset Name: 97-Z003-G1
Dataset Date: Apr 7, 1998 1:24 pm
Wind File: WNDFILES\97STAR.WND

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ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	1.36E-04
BREAST	1.54E-04
R MAR	6.05E-03
LUNGS	3.35E-01
THYROID	1.33E-04
ENDOST	8.00E-02
RMNDR	3.51E-03
EFFEC	4.44E-02

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	2.52E-03
INHALATION	4.19E-02
AIR IMMERSION	3.51E-09
GROUND SURFACE	2.65E-05
INTERNAL	4.44E-02
EXTERNAL	2.65E-05
TOTAL	4.44E-02

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	1.92E-02
U-235	9.65E-04
U-236	7.06E-04
U-238	1.91E-02
RA-226	1.87E-06
RA-228	3.01E-06
TH-228	1.05E-03
TH-230	3.09E-03
TH-232	2.36E-04
TH-234	5.03E-05
TOTAL	4.44E-02

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	5.93E-09
BONE	3.93E-09
THYROID	3.03E-11
BREAST	3.42E-10
LUNG	5.46E-07
STOMACH	2.29E-10
BOWEL	6.09E-10
LIVER	2.79E-10
PANCREAS	1.33E-10
URINARY	7.30E-09
OTHER	1.63E-10
TOTAL	5.65E-07

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	1.34E-08
INHALATION	5.51E-07
AIR IMMERSION	7.83E-14
GROUND SURFACE	6.08E-10
INTERNAL	5.65E-07
EXTERNAL	6.08E-10
TOTAL	5.65E-07

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	2.47E-07
U-235	1.26E-08
U-236	9.06E-09
U-238	2.47E-07
RA-226	2.46E-11
RA-228	3.06E-11
TH-228	2.11E-08
TH-230	2.53E-08
TH-232	1.33E-09
TH-234	1.59E-09
TOTAL	5.65E-07

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

Direction	Distance (m) 1363	1317	2008	1617	1305	921	979
N	1.1E-02	1.1E-02	6.8E-03	8.8E-03	1.1E-02	1.7E-02	1.5E-02
NNW	7.1E-03	7.4E-03	4.5E-03	5.9E-03	7.5E-03	1.1E-02	1.0E-02
NW	7.2E-03	7.5E-03	4.6E-03	6.0E-03	7.6E-03	1.1E-02	1.0E-02
WNW	7.6E-03	7.8E-03	5.0E-03	6.3E-03	7.9E-03	1.1E-02	1.0E-02
W	1.2E-02	1.3E-02	7.8E-03	1.0E-02	1.3E-02	1.8E-02	1.7E-02
WSW	1.3E-02	1.4E-02	7.7E-03	1.1E-02	1.4E-02	2.3E-02	2.1E-02
SW	7.5E-03	7.8E-03	4.5E-03	6.0E-03	7.9E-03	1.2E-02	1.1E-02
SSW	6.3E-03	6.6E-03	4.0E-03	5.2E-03	6.6E-03	1.0E-02	9.3E-03
S	7.2E-03	7.5E-03	4.7E-03	6.0E-03	7.5E-03	1.1E-02	1.0E-02
SSE	1.3E-02	1.4E-02	9.2E-03	1.1E-02	1.4E-02	1.8E-02	1.8E-02
SE	2.1E-02	2.1E-02	1.5E-02	1.8E-02	2.1E-02	2.7E-02	2.6E-02
ESE	2.2E-02	2.3E-02	1.5E-02	1.9E-02	2.3E-02	2.9E-02	2.8E-02
E	2.8E-02	2.9E-02	1.8E-02	2.3E-02	2.9E-02	4.0E-02	3.8E-02
ENE	2.9E-02	3.0E-02	1.8E-02	2.4E-02	3.0E-02	4.4E-02	4.1E-02
NE	2.5E-02	2.6E-02	1.6E-02	2.0E-02	2.6E-02	3.9E-02	3.6E-02
NNE	1.6E-02	1.7E-02	9.8E-03	1.3E-02	1.7E-02	2.6E-02	2.4E-02

Direction	Distance (m) 1035	1068	1204	1199	1207	1133	1135
N	1.5E-02	1.4E-02	1.2E-02	1.2E-02	1.2E-02	1.3E-02	1.3E-02
NNW	9.7E-03	9.4E-03	8.2E-03	8.3E-03	8.2E-03	8.8E-03	8.8E-03
NW	9.8E-03	9.5E-03	8.3E-03	8.4E-03	8.3E-03	8.9E-03	8.9E-03
WNW	9.9E-03	9.6E-03	8.6E-03	8.6E-03	8.5E-03	9.1E-03	9.1E-03
W	1.6E-02	1.6E-02	1.4E-02	1.4E-02	1.4E-02	1.5E-02	1.5E-02
WSW	1.9E-02	1.8E-02	1.6E-02	1.6E-02	1.6E-02	1.7E-02	1.7E-02
SW	1.1E-02	1.0E-02	8.7E-03	8.8E-03	8.7E-03	9.4E-03	9.4E-03
SSW	8.7E-03	8.4E-03	7.3E-03	7.3E-03	7.3E-03	7.8E-03	7.8E-03
S	9.6E-03	9.3E-03	8.2E-03	8.2E-03	8.2E-03	8.7E-03	8.7E-03
SSE	1.7E-02	1.6E-02	1.5E-02	1.5E-02	1.5E-02	1.6E-02	1.6E-02
SE	2.5E-02	2.5E-02	2.3E-02	2.3E-02	2.3E-02	2.4E-02	2.4E-02
ESE	2.7E-02	2.6E-02	2.4E-02	2.4E-02	2.4E-02	2.5E-02	2.5E-02
E	3.6E-02	3.5E-02	3.1E-02	3.1E-02	3.1E-02	3.3E-02	3.3E-02
ENE	3.9E-02	3.8E-02	3.3E-02	3.3E-02	3.3E-02	3.5E-02	3.5E-02
NE	3.4E-02	3.3E-02	2.9E-02	2.9E-02	2.9E-02	3.1E-02	3.1E-02
NNE	2.2E-02	2.1E-02	1.9E-02	1.9E-02	1.9E-02	2.0E-02	2.0E-02

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INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1763	1317	1182	1186	1811	1796
N	8.0E-03	1.1E-02	1.3E-02	1.3E-02	7.7E-03	7.8E-03
NNW	5.3E-03	7.4E-03	8.4E-03	8.4E-03	5.1E-03	5.2E-03
NW	5.4E-03	7.5E-03	8.5E-03	8.5E-03	5.2E-03	5.3E-03
WNW	5.8E-03	7.8E-03	8.7E-03	8.7E-03	5.6E-03	5.6E-03
W	9.2E-03	1.3E-02	1.4E-02	1.4E-02	8.9E-03	9.0E-03
WSW	9.3E-03	1.4E-02	1.6E-02	1.6E-02	9.0E-03	9.1E-03
SW	5.4E-03	7.8E-03	8.9E-03	8.9E-03	5.2E-03	5.2E-03
SSW	4.6E-03	6.6E-03	7.4E-03	7.4E-03	4.5E-03	4.5E-03
S	5.5E-03	7.5E-03	8.4E-03	8.3E-03	5.3E-03	5.3E-03
SSE	1.1E-02	1.4E-02	1.5E-02	1.5E-02	1.0E-02	1.0E-02
SE	1.7E-02	2.1E-02	2.3E-02	2.3E-02	1.6E-02	1.6E-02
ESE	1.8E-02	2.3E-02	2.5E-02	2.4E-02	1.7E-02	1.7E-02
E	2.1E-02	2.9E-02	3.2E-02	3.2E-02	2.1E-02	2.1E-02
ENE	2.1E-02	3.0E-02	3.4E-02	3.3E-02	2.0E-02	2.1E-02
NE	1.8E-02	2.6E-02	2.9E-02	2.9E-02	1.8E-02	1.8E-02
NNE	1.2E-02	1.7E-02	1.9E-02	1.9E-02	1.1E-02	1.1E-02

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m) 1363	1317	2008	1617	1305	921	979
N	1.3E-07	1.4E-07	8.4E-08	1.1E-07	1.4E-07	2.1E-07	2.0E-07
NNW	8.9E-08	9.2E-08	5.5E-08	7.2E-08	9.3E-08	1.4E-07	1.3E-07
NW	9.0E-08	9.3E-08	5.6E-08	7.3E-08	9.4E-08	1.4E-07	1.3E-07
WNW	9.4E-08	9.7E-08	6.1E-08	7.8E-08	9.8E-08	1.4E-07	1.3E-07
W	1.5E-07	1.6E-07	9.7E-08	1.3E-07	1.6E-07	2.3E-07	2.2E-07
WSW	1.7E-07	1.7E-07	9.6E-08	1.3E-07	1.8E-07	2.9E-07	2.6E-07
SW	9.3E-08	9.7E-08	5.5E-08	7.4E-08	9.8E-08	1.6E-07	1.4E-07
SSW	7.8E-08	8.1E-08	4.8E-08	6.3E-08	8.2E-08	1.3E-07	1.2E-07
S	8.9E-08	9.3E-08	5.7E-08	7.4E-08	9.4E-08	1.4E-07	1.3E-07
SSE	1.7E-07	1.7E-07	1.1E-07	1.4E-07	1.8E-07	2.3E-07	2.2E-07
SE	2.6E-07	2.7E-07	1.8E-07	2.3E-07	2.7E-07	3.4E-07	3.3E-07
ESE	2.8E-07	2.9E-07	1.9E-07	2.4E-07	2.9E-07	3.7E-07	3.5E-07
E	3.5E-07	3.6E-07	2.3E-07	2.9E-07	3.7E-07	5.1E-07	4.8E-07
ENE	3.6E-07	3.8E-07	2.3E-07	3.0E-07	3.8E-07	5.7E-07	5.3E-07
NE	3.2E-07	3.3E-07	2.0E-07	2.6E-07	3.3E-07	5.0E-07	4.6E-07
NNE	2.0E-07	2.1E-07	1.2E-07	1.6E-07	2.1E-07	3.3E-07	3.0E-07

Direction	Distance (m) 1035	1068	1204	1199	1207	1133	1135
N	1.8E-07	1.8E-07	1.5E-07	1.6E-07	1.5E-07	1.7E-07	1.7E-07
NNW	1.2E-07	1.2E-07	1.0E-07	1.0E-07	1.0E-07	1.1E-07	1.1E-07
NW	1.2E-07	1.2E-07	1.0E-07	1.0E-07	1.0E-07	1.1E-07	1.1E-07
WNW	1.2E-07	1.2E-07	1.1E-07	1.1E-07	1.1E-07	1.1E-07	1.1E-07
W	2.0E-07	2.0E-07	1.7E-07	1.8E-07	1.7E-07	1.9E-07	1.9E-07
WSW	2.4E-07	2.3E-07	2.0E-07	2.0E-07	2.0E-07	2.2E-07	2.1E-07
SW	1.3E-07	1.3E-07	1.1E-07	1.1E-07	1.1E-07	1.2E-07	1.2E-07
SSW	1.1E-07	1.0E-07	9.0E-08	9.1E-08	9.0E-08	9.7E-08	9.7E-08
S	1.2E-07	1.2E-07	1.0E-07	1.0E-07	1.0E-07	1.1E-07	1.1E-07
SSE	2.1E-07	2.1E-07	1.9E-07	1.9E-07	1.9E-07	2.0E-07	2.0E-07
SE	3.2E-07	3.1E-07	2.9E-07	2.9E-07	2.9E-07	3.0E-07	3.0E-07
ESE	3.4E-07	3.3E-07	3.1E-07	3.1E-07	3.1E-07	3.2E-07	3.2E-07
E	4.5E-07	4.4E-07	3.9E-07	4.0E-07	3.9E-07	4.2E-07	4.2E-07
ENE	4.9E-07	4.8E-07	4.2E-07	4.2E-07	4.2E-07	4.5E-07	4.5E-07
NE	4.3E-07	4.2E-07	3.6E-07	3.7E-07	3.6E-07	3.9E-07	3.9E-07
NNE	2.8E-07	2.7E-07	2.3E-07	2.4E-07	2.3E-07	2.5E-07	2.5E-07

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1763	1317	1182	1186	1811	1796
N	9.9E-08	1.4E-07	1.6E-07	1.6E-07	9.6E-08	9.7E-08
NNW	6.5E-08	9.2E-08	1.0E-07	1.0E-07	6.3E-08	6.3E-08
NW	6.6E-08	9.3E-08	1.1E-07	1.1E-07	6.4E-08	6.5E-08
WNW	7.1E-08	9.7E-08	1.1E-07	1.1E-07	6.9E-08	6.9E-08
W	1.1E-07	1.6E-07	1.8E-07	1.8E-07	1.1E-07	1.1E-07
WSW	1.2E-07	1.7E-07	2.0E-07	2.0E-07	1.1E-07	1.1E-07
SW	6.6E-08	9.7E-08	1.1E-07	1.1E-07	6.3E-08	6.4E-08
SSW	5.7E-08	8.1E-08	9.2E-08	9.2E-08	5.5E-08	5.5E-08
S	6.7E-08	9.3E-08	1.0E-07	1.0E-07	6.5E-08	6.5E-08
SSE	1.3E-07	1.7E-07	1.9E-07	1.9E-07	1.3E-07	1.3E-07
SE	2.1E-07	2.7E-07	2.9E-07	2.9E-07	2.0E-07	2.1E-07
ESE	2.2E-07	2.9E-07	3.1E-07	3.1E-07	2.2E-07	2.2E-07
E	2.7E-07	3.6E-07	4.0E-07	4.0E-07	2.6E-07	2.6E-07
ENE	2.7E-07	3.8E-07	4.3E-07	4.3E-07	2.6E-07	2.6E-07
NE	2.3E-07	3.3E-07	3.7E-07	3.7E-07	2.2E-07	2.3E-07
NNE	1.5E-07	2.1E-07	2.4E-07	2.4E-07	1.4E-07	1.4E-07

1620

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Apr 7, 1998 3:51 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

2.83E-02

At This Location: 1374 Meters East Northeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Building 15 Perchloric Hood Stacks [G2]

Dataset Name: 97-Z003-G2
Dataset Date: Apr 7, 1998 1:24 pm
Wind File: WNDFILES\97STAR.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 1374 Meters East Northeast
Lifetime Fatal Cancer Risk: 3.59E-07

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	8.67E-05
BREAST	9.85E-05
R MAR	3.85E-03
LUNGS	2.13E-01
THYROID	8.45E-05
ENDOST	5.09E-02
RMNDR	2.24E-03
EFFEC	2.83E-02

RADIONUCLIDE EMISSIONS DURING THE YEAR 1997

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	1.00	8.7E-05	8.7E-05
U-235	Y	1.00	4.6E-06	4.6E-06
U-236	Y	1.00	3.4E-06	3.4E-06
U-238	Y	1.00	9.7E-05	9.7E-05
RA-226	W	1.00	6.2E-08	6.2E-08
RA-228	W	1.00	2.5E-07	2.5E-07
TH-228	Y	1.00	2.6E-06	2.6E-06
TH-230	Y	1.00	7.7E-06	7.7E-06
TH-232	Y	1.00	4.1E-07	4.1E-07
TH-234	Y	1.00	3.8E-04	3.8E-04

SITE INFORMATION

Temperature: 11 degrees C
Precipitation: 102 cm/y
Mixing Height: 950 m

SOURCE INFORMATION

Source Number:	1
Stack Height (m):	5.94
Diameter (m):	0.41
Plume Rise Momentum (m/s): (Exit Velocity)	5.46E+00

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

1374	1643	2013	1916	2622	2247	2239	1735	1411	2347
2415	1802	2307	1654	1993	2083	2035	1766	1798	1913

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Apr 7, 1998 3:51 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Building 15 Perchloric Hood Stacks [G2]

Dataset Name: 97-Z003-G2
Dataset Date: Apr 7, 1998 1:24 pm
Wind File: WNDFILES\97STAR.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	8.67E-05
BREAST	9.85E-05
R MAR	3.85E-03
LUNGS	2.13E-01
THYROID	8.45E-05
ENDOST	5.09E-02
RMNDR	2.24E-03
EFFEC	2.83E-02

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	1.61E-03
INHALATION	2.66E-02
AIR IMMERSION	2.23E-09
GROUND SURFACE	1.69E-05
INTERNAL	2.82E-02
EXTERNAL	1.69E-05
TOTAL	2.83E-02

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	1.22E-02
U-235	6.14E-04
U-236	4.49E-04
U-238	1.22E-02
RA-226	1.19E-06
RA-228	1.92E-06
TH-228	6.68E-04
TH-230	1.96E-03
TH-232	1.50E-04
TH-234	3.21E-05
TOTAL	2.83E-02

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	3.78E-09
BONE	2.50E-09
THYROID	1.94E-11
BREAST	2.18E-10
LUNG	3.47E-07
STOMACH	1.46E-10
BOWEL	3.88E-10
LIVER	1.78E-10
PANCREAS	8.50E-11
URINARY	4.66E-09
OTHER	1.04E-10
TOTAL	3.59E-07

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	8.53E-09
INHALATION	3.50E-07
AIR IMMERSION	4.98E-14
GROUND SURFACE	3.88E-10
INTERNAL	3.59E-07
EXTERNAL	3.88E-10
TOTAL	3.59E-07

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	1.57E-07
U-235	8.04E-09
U-236	5.76E-09
U-238	1.57E-07
RA-226	1.56E-11
RA-228	1.95E-11
TH-228	1.34E-08
TH-230	1.61E-08
TH-232	8.47E-10
TH-234	1.01E-09
TOTAL	3.59E-07

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	1374	1643	2013	1916	2622	2247	2239
N	1.0E-02	8.5E-03	6.6E-03	7.1E-03	4.7E-03	5.8E-03	5.8E-03
NNW	6.9E-03	5.6E-03	4.4E-03	4.7E-03	3.1E-03	3.8E-03	3.8E-03
NW	7.0E-03	5.7E-03	4.4E-03	4.7E-03	3.2E-03	3.9E-03	3.9E-03
WNW	7.4E-03	6.1E-03	4.8E-03	5.1E-03	3.5E-03	4.2E-03	4.2E-03
W	1.2E-02	9.8E-03	7.7E-03	8.2E-03	5.5E-03	6.7E-03	6.7E-03
WSW	1.3E-02	1.0E-02	7.6E-03	8.1E-03	5.2E-03	6.5E-03	6.5E-03
SW	7.3E-03	5.7E-03	4.4E-03	4.7E-03	3.0E-03	3.8E-03	3.8E-03
SSW	6.1E-03	4.9E-03	3.8E-03	4.1E-03	2.7E-03	3.3E-03	3.3E-03
S	7.0E-03	5.8E-03	4.5E-03	4.8E-03	3.3E-03	4.0E-03	4.0E-03
SSE	1.3E-02	1.1E-02	9.0E-03	9.5E-03	6.6E-03	7.9E-03	8.0E-03
SE	2.1E-02	1.8E-02	1.4E-02	1.5E-02	1.1E-02	1.3E-02	1.3E-02
ESE	2.2E-02	1.9E-02	1.5E-02	1.6E-02	1.1E-02	1.4E-02	1.4E-02
E	2.7E-02	2.3E-02	1.8E-02	1.9E-02	1.3E-02	1.6E-02	1.6E-02
ENE	2.8E-02	2.3E-02	1.8E-02	1.9E-02	1.2E-02	1.5E-02	1.5E-02
NE	2.5E-02	2.0E-02	1.5E-02	1.6E-02	1.1E-02	1.3E-02	1.3E-02
NNE	1.6E-02	1.3E-02	9.7E-03	1.0E-02	6.7E-03	8.3E-03	8.4E-03

	Distance (m)						
Direction	1735	1411	2347	2415	1802	2307	1654
N	8.0E-03	1.0E-02	5.5E-03	5.2E-03	7.6E-03	5.6E-03	8.5E-03
NNW	5.3E-03	6.7E-03	3.6E-03	3.5E-03	5.0E-03	3.7E-03	5.6E-03
NW	5.4E-03	6.8E-03	3.7E-03	3.5E-03	5.1E-03	3.7E-03	5.7E-03
WNW	5.7E-03	7.2E-03	4.0E-03	3.9E-03	5.5E-03	4.1E-03	6.0E-03
W	9.2E-03	1.2E-02	6.3E-03	6.1E-03	8.8E-03	6.5E-03	9.7E-03
WSW	9.4E-03	1.3E-02	6.1E-03	5.8E-03	8.9E-03	6.2E-03	1.0E-02
SW	5.3E-03	7.0E-03	3.6E-03	3.4E-03	5.1E-03	3.6E-03	5.7E-03
SSW	4.6E-03	5.9E-03	3.1E-03	3.0E-03	4.4E-03	3.2E-03	4.9E-03
S	5.4E-03	6.8E-03	3.8E-03	3.6E-03	5.2E-03	3.8E-03	5.7E-03
SSE	1.1E-02	1.3E-02	7.5E-03	7.3E-03	1.0E-02	7.7E-03	1.1E-02
SE	1.7E-02	2.0E-02	1.2E-02	1.2E-02	1.6E-02	1.2E-02	1.8E-02
ESE	1.8E-02	2.1E-02	1.3E-02	1.2E-02	1.7E-02	1.3E-02	1.9E-02
E	2.1E-02	2.7E-02	1.5E-02	1.4E-02	2.1E-02	1.5E-02	2.3E-02
ENE	2.1E-02	2.7E-02	1.5E-02	1.4E-02	2.0E-02	1.5E-02	2.3E-02
NE	1.9E-02	2.4E-02	1.3E-02	1.2E-02	1.8E-02	1.3E-02	2.0E-02
NNE	1.2E-02	1.5E-02	7.9E-03	7.6E-03	1.1E-02	8.0E-03	1.2E-02

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INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1993	2083	2035	1766	1798	1913
N	6.7E-03	6.4E-03	6.5E-03	7.8E-03	7.6E-03	7.1E-03
NNW	4.4E-03	4.2E-03	4.3E-03	5.2E-03	5.0E-03	4.7E-03
NW	4.5E-03	4.3E-03	4.4E-03	5.2E-03	5.1E-03	4.7E-03
WNW	4.9E-03	4.6E-03	4.8E-03	5.6E-03	5.5E-03	5.1E-03
W	7.8E-03	7.4E-03	7.6E-03	9.0E-03	8.8E-03	8.2E-03
WSW	7.7E-03	7.2E-03	7.5E-03	9.2E-03	8.9E-03	8.2E-03
SW	4.4E-03	4.2E-03	4.3E-03	5.2E-03	5.1E-03	4.7E-03
SSW	3.9E-03	3.6E-03	3.8E-03	4.5E-03	4.4E-03	4.1E-03
S	4.6E-03	4.4E-03	4.5E-03	5.3E-03	5.2E-03	4.8E-03
SSE	9.1E-03	8.7E-03	8.9E-03	1.0E-02	1.0E-02	9.5E-03
SE	1.5E-02	1.4E-02	1.4E-02	1.7E-02	1.6E-02	1.5E-02
ESE	1.5E-02	1.5E-02	1.5E-02	1.7E-02	1.7E-02	1.6E-02
E	1.8E-02	1.7E-02	1.8E-02	2.1E-02	2.1E-02	1.9E-02
ENE	1.8E-02	1.7E-02	1.8E-02	2.1E-02	2.1E-02	1.9E-02
NE	1.6E-02	1.5E-02	1.5E-02	1.8E-02	1.8E-02	1.6E-02
NNE	9.8E-03	9.2E-03	9.5E-03	1.1E-02	1.1E-02	1.0E-02

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m) 1374	1643	2013	1916	2622	2247	2239
N	1.3E-07	1.1E-07	8.3E-08	8.9E-08	5.8E-08	7.2E-08	7.2E-08
NNW	8.7E-08	7.0E-08	5.4E-08	5.8E-08	3.8E-08	4.7E-08	4.7E-08
NW	8.8E-08	7.1E-08	5.5E-08	5.9E-08	3.9E-08	4.8E-08	4.8E-08
WNW	9.2E-08	7.6E-08	6.0E-08	6.4E-08	4.3E-08	5.2E-08	5.3E-08
W	1.5E-07	1.2E-07	9.6E-08	1.0E-07	6.8E-08	8.4E-08	8.4E-08
WSW	1.6E-07	1.3E-07	9.5E-08	1.0E-07	6.4E-08	8.1E-08	8.1E-08
SW	9.1E-08	7.2E-08	5.4E-08	5.8E-08	3.7E-08	4.6E-08	4.7E-08
SSW	7.6E-08	6.1E-08	4.7E-08	5.0E-08	3.3E-08	4.1E-08	4.1E-08
S	8.8E-08	7.2E-08	5.6E-08	6.0E-08	4.0E-08	4.9E-08	4.9E-08
SSE	1.7E-07	1.4E-07	1.1E-07	1.2E-07	8.2E-08	1.0E-07	1.0E-07
SE	2.6E-07	2.2E-07	1.8E-07	1.9E-07	1.3E-07	1.6E-07	1.6E-07
ESE	2.8E-07	2.4E-07	1.9E-07	2.0E-07	1.4E-07	1.7E-07	1.7E-07
E	3.5E-07	2.9E-07	2.3E-07	2.4E-07	1.6E-07	2.0E-07	2.0E-07
ENE	3.6E-07	2.9E-07	2.3E-07	2.4E-07	1.6E-07	1.9E-07	2.0E-07
NE	3.1E-07	2.5E-07	1.9E-07	2.1E-07	1.4E-07	1.7E-07	1.7E-07
NNE	2.0E-07	1.6E-07	1.2E-07	1.3E-07	8.4E-08	1.0E-07	1.1E-07

Direction	Distance (m) 1735	1411	2347	2415	1802	2307	1654
N	1.0E-07	1.3E-07	6.8E-08	6.5E-08	9.6E-08	7.0E-08	1.1E-07
NNW	6.6E-08	8.4E-08	4.4E-08	4.2E-08	6.2E-08	4.5E-08	7.0E-08
NW	6.7E-08	8.6E-08	4.5E-08	4.3E-08	6.4E-08	4.6E-08	7.1E-08
WNW	7.2E-08	9.0E-08	4.9E-08	4.8E-08	6.8E-08	5.1E-08	7.6E-08
W	1.2E-07	1.5E-07	7.9E-08	7.6E-08	1.1E-07	8.1E-08	1.2E-07
WSW	1.2E-07	1.6E-07	7.6E-08	7.3E-08	1.1E-07	7.8E-08	1.3E-07
SW	6.7E-08	8.8E-08	4.4E-08	4.2E-08	6.3E-08	4.5E-08	7.1E-08
SSW	5.7E-08	7.4E-08	3.8E-08	3.7E-08	5.4E-08	3.9E-08	6.1E-08
S	6.8E-08	8.5E-08	4.6E-08	4.5E-08	6.5E-08	4.7E-08	7.1E-08
SSE	1.3E-07	1.6E-07	9.5E-08	9.1E-08	1.3E-07	9.7E-08	1.4E-07
SE	2.1E-07	2.6E-07	1.5E-07	1.5E-07	2.1E-07	1.6E-07	2.2E-07
ESE	2.3E-07	2.7E-07	1.6E-07	1.6E-07	2.2E-07	1.7E-07	2.4E-07
E	2.7E-07	3.4E-07	1.9E-07	1.8E-07	2.6E-07	1.9E-07	2.9E-07
ENE	2.7E-07	3.5E-07	1.8E-07	1.8E-07	2.6E-07	1.9E-07	2.9E-07
NE	2.4E-07	3.0E-07	1.6E-07	1.5E-07	2.2E-07	1.6E-07	2.5E-07
NNE	1.5E-07	1.9E-07	9.9E-08	9.5E-08	1.4E-07	1.0E-07	1.6E-07

000206

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1993	2083	2035	1766	1798	1913
N	8.4E-08	7.9E-08	8.2E-08	9.8E-08	9.6E-08	8.9E-08
NNW	5.5E-08	5.2E-08	5.3E-08	6.4E-08	6.3E-08	5.8E-08
NW	5.6E-08	5.3E-08	5.4E-08	6.5E-08	6.4E-08	5.9E-08
WNW	6.1E-08	5.7E-08	5.9E-08	7.0E-08	6.9E-08	6.4E-08
W	9.8E-08	9.2E-08	9.5E-08	1.1E-07	1.1E-07	1.0E-07
WSW	9.6E-08	9.0E-08	9.4E-08	1.2E-07	1.1E-07	1.0E-07
SW	5.5E-08	5.2E-08	5.3E-08	6.5E-08	6.3E-08	5.8E-08
SSW	4.8E-08	4.5E-08	4.6E-08	5.6E-08	5.5E-08	5.0E-08
S	5.7E-08	5.4E-08	5.6E-08	6.6E-08	6.5E-08	6.0E-08
SSE	1.1E-07	1.1E-07	1.1E-07	1.3E-07	1.3E-07	1.2E-07
SE	1.8E-07	1.8E-07	1.8E-07	2.1E-07	2.1E-07	1.9E-07
ESE	2.0E-07	1.9E-07	1.9E-07	2.2E-07	2.2E-07	2.0E-07
E	2.3E-07	2.2E-07	2.3E-07	2.7E-07	2.6E-07	2.4E-07
ENE	2.3E-07	2.2E-07	2.2E-07	2.7E-07	2.6E-07	2.4E-07
NE	2.0E-07	1.9E-07	1.9E-07	2.3E-07	2.3E-07	2.1E-07
NNE	1.2E-07	1.2E-07	1.2E-07	1.4E-07	1.4E-07	1.3E-07

1620

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Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Apr 7, 1998 3:52 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent (mrem/year)
3.32E-05

At This Location: 921 Meters Northeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Building 15 MEPA/HEPA Stacks [G1]

Dataset Name: 97-Z004-G1
Dataset Date: Apr 7, 1998 1:37 pm
Wind File: WNDFILES\97STAR.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 921 Meters Northeast
Lifetime Fatal Cancer Risk: 3.89E-10

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	1.23E-07
BREAST	1.38E-07
R MAR	1.05E-05
LUNGS	2.28E-04
THYROID	1.21E-07
ENDOST	1.32E-04
RMNDR	1.70E-06
EFFEC	3.32E-05

RADIONUCLIDE EMISSIONS DURING THE YEAR 1997

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	0.30	7.5E-08	7.5E-08
U-235	Y	1.00	1.9E-08	1.9E-08
U-236	Y	1.00	1.9E-08	1.9E-08
U-238	Y	0.30	8.6E-08	8.6E-08
RA-226	W	1.00	3.6E-11	3.6E-11
RA-228	W	1.00	1.4E-10	1.4E-10
TH-228	Y	1.00	1.1E-08	1.1E-08
TH-230	Y	1.00	5.5E-08	5.5E-08
TH-232	Y	1.00	1.2E-08	1.2E-08
TH-234	Y	1.00	2.3E-07	2.3E-07

SITE INFORMATION

Temperature: 11 degrees C
Precipitation: 102 cm/y
Mixing Height: 950 m

SOURCE INFORMATION

Source Number: 1

Stack Height (m): 14.75
Diameter (m): 0.91

Plume Rise
Momentum (m/s): 1.73E+01
(Exit Velocity)

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

1363	1317	2008	1617	1305	921	979	1035	1068	1204
1199	1207	1133	1135	1763	1317	1182	1186	1811	1796

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D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Apr 7, 1998 3:52 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Building 15 MEPA/HEPA Stacks [G1]

Dataset Name: 97-Z004-G1
Dataset Date: Apr 7, 1998 1:37 pm
Wind File: WNDFILES\97STAR.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	1.23E-07
BREAST	1.38E-07
R MAR	1.05E-05
LUNGS	2.28E-04
THYROID	1.21E-07
ENDOST	1.32E-04
RMNDR	1.70E-06
EFFEC	3.32E-05

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	1.31E-06
INHALATION	3.18E-05
AIR IMMERSION	1.51E-12
GROUND SURFACE	4.22E-08
INTERNAL	3.31E-05
EXTERNAL	4.22E-08
TOTAL	3.32E-05

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	9.47E-06
U-235	1.37E-06
U-236	1.36E-06
U-238	9.73E-06
RA-226	4.30E-10
RA-228	7.17E-10
TH-228	1.49E-06
TH-230	7.39E-06
TH-232	2.36E-06
TH-234	1.17E-08
TOTAL	3.32E-05

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	9.28E-12
BONE	6.10E-12
THYROID	3.33E-14
BREAST	3.48E-13
LUNG	3.68E-10
STOMACH	2.03E-13
BOWEL	2.93E-13
LIVER	4.23E-13
PANCREAS	1.29E-13
URINARY	3.39E-12
OTHER	1.58E-13
TOTAL	3.89E-10

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	6.55E-12
INHALATION	3.81E-10
AIR IMMERSION	3.45E-17
GROUND SURFACE	9.79E-13
INTERNAL	3.88E-10
EXTERNAL	9.79E-13
TOTAL	3.89E-10

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	1.23E-10
U-235	1.79E-11
U-236	1.72E-11
U-238	1.27E-10
RA-226	5.17E-15
RA-228	6.90E-15
TH-228	2.97E-11
TH-230	6.04E-11
TH-232	1.33E-11
TH-234	3.33E-13
TOTAL	3.89E-10

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	1363	1317	2008	1617	1305	921	979
N	9.1E-06	9.5E-06	5.7E-06	7.4E-06	9.6E-06	1.5E-05	1.4E-05
NNW	6.2E-06	6.5E-06	4.0E-06	5.1E-06	6.5E-06	9.6E-06	9.0E-06
NW	5.3E-06	5.5E-06	3.5E-06	4.4E-06	5.5E-06	7.7E-06	7.3E-06
WNW	5.3E-06	5.5E-06	3.4E-06	4.4E-06	5.6E-06	8.1E-06	7.6E-06
W	1.0E-05	1.1E-05	6.7E-06	8.6E-06	1.1E-05	1.6E-05	1.5E-05
WSW	1.6E-05	1.7E-05	1.0E-05	1.3E-05	1.7E-05	2.6E-05	2.4E-05
SW	9.8E-06	1.0E-05	5.8E-06	7.9E-06	1.0E-05	1.6E-05	1.5E-05
SSW	6.7E-06	6.9E-06	4.2E-06	5.4E-06	7.0E-06	1.0E-05	9.7E-06
S	6.4E-06	6.6E-06	4.0E-06	5.2E-06	6.7E-06	1.0E-05	9.3E-06
SSE	7.8E-06	8.1E-06	5.3E-06	6.6E-06	8.2E-06	1.1E-05	1.1E-05
SE	1.2E-05	1.2E-05	7.5E-06	9.5E-06	1.2E-05	1.8E-05	1.7E-05
ESE	1.4E-05	1.5E-05	8.6E-06	1.1E-05	1.5E-05	2.3E-05	2.1E-05
E	1.9E-05	2.0E-05	1.2E-05	1.6E-05	2.0E-05	3.1E-05	2.9E-05
ENE	2.1E-05	2.2E-05	1.4E-05	1.8E-05	2.2E-05	3.2E-05	3.0E-05
NE	2.1E-05	2.2E-05	1.3E-05	1.7E-05	2.2E-05	3.3E-05	3.1E-05
NNE	1.6E-05	1.7E-05	9.9E-06	1.3E-05	1.7E-05	2.6E-05	2.4E-05

	Distance (m)						
Direction	1035	1068	1204	1199	1207	1133	1135
N	1.3E-05	1.2E-05	1.1E-05	1.1E-05	1.1E-05	1.1E-05	1.1E-05
NNW	8.5E-06	8.2E-06	7.2E-06	7.2E-06	7.1E-06	7.7E-06	7.7E-06
NW	7.0E-06	6.8E-06	6.0E-06	6.0E-06	6.0E-06	6.4E-06	6.4E-06
WNW	7.2E-06	7.0E-06	6.1E-06	6.1E-06	6.1E-06	6.5E-06	6.5E-06
W	1.4E-05	1.4E-05	1.2E-05	1.2E-05	1.2E-05	1.3E-05	1.3E-05
WSW	2.3E-05	2.2E-05	1.9E-05	1.9E-05	1.9E-05	2.0E-05	2.0E-05
SW	1.4E-05	1.3E-05	1.2E-05	1.2E-05	1.1E-05	1.2E-05	1.2E-05
SSW	9.1E-06	8.8E-06	7.7E-06	7.7E-06	7.7E-06	8.3E-06	8.2E-06
S	8.8E-06	8.5E-06	7.4E-06	7.4E-06	7.4E-06	7.9E-06	7.9E-06
SSE	1.0E-05	1.0E-05	8.8E-06	8.9E-06	8.8E-06	9.4E-06	9.4E-06
SE	1.6E-05	1.5E-05	1.3E-05	1.3E-05	1.3E-05	1.4E-05	1.4E-05
ESE	2.0E-05	1.9E-05	1.6E-05	1.7E-05	1.6E-05	1.8E-05	1.8E-05
E	2.7E-05	2.6E-05	2.2E-05	2.2E-05	2.2E-05	2.4E-05	2.4E-05
ENE	2.9E-05	2.8E-05	2.4E-05	2.4E-05	2.4E-05	2.6E-05	2.6E-05
NE	2.9E-05	2.8E-05	2.4E-05	2.4E-05	2.4E-05	2.6E-05	2.6E-05
NNE	2.2E-05	2.2E-05	1.9E-05	1.9E-05	1.9E-05	2.0E-05	2.0E-05

000217

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1763	1317	1182	1186	1811	1796
N	6.7E-06	9.5E-06	1.1E-05	1.1E-05	6.5E-06	6.6E-06
NNW	4.6E-06	6.5E-06	7.3E-06	7.3E-06	4.5E-06	4.5E-06
NW	4.0E-06	5.5E-06	6.1E-06	6.1E-06	3.9E-06	3.9E-06
WNW	4.0E-06	5.5E-06	6.2E-06	6.2E-06	3.8E-06	3.9E-06
W	7.8E-06	1.1E-05	1.2E-05	1.2E-05	7.6E-06	7.7E-06
WSW	1.2E-05	1.7E-05	1.9E-05	1.9E-05	1.2E-05	1.2E-05
SW	7.0E-06	1.0E-05	1.2E-05	1.2E-05	6.7E-06	6.8E-06
SSW	4.9E-06	6.9E-06	7.9E-06	7.8E-06	4.7E-06	4.8E-06
S	4.7E-06	6.6E-06	7.5E-06	7.5E-06	4.6E-06	4.6E-06
SSE	6.0E-06	8.1E-06	9.0E-06	9.0E-06	5.9E-06	5.9E-06
SE	8.7E-06	1.2E-05	1.4E-05	1.4E-05	8.4E-06	8.5E-06
ESE	1.0E-05	1.5E-05	1.7E-05	1.7E-05	9.8E-06	9.9E-06
E	1.4E-05	2.0E-05	2.3E-05	2.3E-05	1.4E-05	1.4E-05
ENE	1.6E-05	2.2E-05	2.5E-05	2.5E-05	1.6E-05	1.6E-05
NE	1.6E-05	2.2E-05	2.5E-05	2.5E-05	1.5E-05	1.5E-05
NNE	1.2E-05	1.7E-05	1.9E-05	1.9E-05	1.1E-05	1.1E-05

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m) 1363	1317	2008	1617	1305	921	979
N	1.1E-10	1.1E-10	6.6E-11	8.6E-11	1.1E-10	1.7E-10	1.6E-10
NNW	7.2E-11	7.5E-11	4.5E-11	5.9E-11	7.5E-11	1.1E-10	1.0E-10
NW	6.1E-11	6.3E-11	4.0E-11	5.0E-11	6.3E-11	8.9E-11	8.5E-11
WNW	6.1E-11	6.3E-11	3.9E-11	5.0E-11	6.4E-11	9.4E-11	8.8E-11
W	1.2E-10	1.3E-10	7.8E-11	1.0E-10	1.3E-10	1.8E-10	1.7E-10
WSW	1.9E-10	2.0E-10	1.2E-10	1.6E-10	2.0E-10	3.0E-10	2.8E-10
SW	1.1E-10	1.2E-10	6.7E-11	9.1E-11	1.2E-10	1.9E-10	1.7E-10
SSW	7.7E-11	8.0E-11	4.8E-11	6.3E-11	8.1E-11	1.2E-10	1.1E-10
S	7.4E-11	7.7E-11	4.6E-11	6.0E-11	7.8E-11	1.2E-10	1.1E-10
SSE	9.0E-11	9.3E-11	6.0E-11	7.6E-11	9.4E-11	1.3E-10	1.3E-10
SE	1.3E-10	1.4E-10	8.6E-11	1.1E-10	1.4E-10	2.1E-10	2.0E-10
ESE	1.6E-10	1.7E-10	1.0E-10	1.3E-10	1.7E-10	2.7E-10	2.5E-10
E	2.2E-10	2.3E-10	1.4E-10	1.8E-10	2.4E-10	3.6E-10	3.3E-10
ENE	2.5E-10	2.6E-10	1.6E-10	2.1E-10	2.6E-10	3.8E-10	3.5E-10
NE	2.5E-10	2.6E-10	1.6E-10	2.0E-10	2.6E-10	3.9E-10	3.6E-10
NNE	1.9E-10	2.0E-10	1.2E-10	1.5E-10	2.0E-10	3.0E-10	2.8E-10

Direction	Distance (m) 1035	1068	1204	1199	1207	1133	1135
N	1.5E-10	1.4E-10	1.2E-10	1.2E-10	1.2E-10	1.3E-10	1.3E-10
NNW	9.9E-11	9.5E-11	8.3E-11	8.3E-11	8.3E-11	8.9E-11	8.9E-11
NW	8.0E-11	7.8E-11	6.9E-11	6.9E-11	6.9E-11	7.3E-11	7.3E-11
WNW	8.3E-11	8.0E-11	7.0E-11	7.1E-11	7.0E-11	7.5E-11	7.5E-11
W	1.6E-10	1.6E-10	1.4E-10	1.4E-10	1.4E-10	1.5E-10	1.5E-10
WSW	2.7E-10	2.6E-10	2.2E-10	2.2E-10	2.2E-10	2.4E-10	2.4E-10
SW	1.6E-10	1.6E-10	1.3E-10	1.3E-10	1.3E-10	1.4E-10	1.4E-10
SSW	1.1E-10	1.0E-10	8.9E-11	9.0E-11	8.9E-11	9.6E-11	9.6E-11
S	1.0E-10	9.8E-11	8.5E-11	8.6E-11	8.5E-11	9.2E-11	9.2E-11
SSE	1.2E-10	1.2E-10	1.0E-10	1.0E-10	1.0E-10	1.1E-10	1.1E-10
SE	1.8E-10	1.8E-10	1.5E-10	1.6E-10	1.5E-10	1.7E-10	1.7E-10
ESE	2.3E-10	2.2E-10	1.9E-10	1.9E-10	1.9E-10	2.1E-10	2.1E-10
E	3.1E-10	3.0E-10	2.6E-10	2.6E-10	2.6E-10	2.8E-10	2.8E-10
ENE	3.3E-10	3.2E-10	2.8E-10	2.8E-10	2.8E-10	3.0E-10	3.0E-10
NE	3.4E-10	3.3E-10	2.9E-10	2.9E-10	2.8E-10	3.1E-10	3.1E-10
NNE	2.6E-10	2.5E-10	2.2E-10	2.2E-10	2.2E-10	2.4E-10	2.4E-10

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INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1763	1317	1182	1186	1811	1796
N	7.7E-11	1.1E-10	1.3E-10	1.3E-10	7.5E-11	7.6E-11
NNW	5.3E-11	7.5E-11	8.5E-11	8.4E-11	5.1E-11	5.2E-11
NW	4.6E-11	6.3E-11	7.0E-11	7.0E-11	4.5E-11	4.5E-11
WNW	4.5E-11	6.3E-11	7.2E-11	7.2E-11	4.4E-11	4.4E-11
W	9.1E-11	1.3E-10	1.4E-10	1.4E-10	8.8E-11	8.9E-11
WSW	1.4E-10	2.0E-10	2.3E-10	2.3E-10	1.3E-10	1.4E-10
SW	8.1E-11	1.2E-10	1.4E-10	1.4E-10	7.8E-11	7.9E-11
SSW	5.6E-11	8.0E-11	9.1E-11	9.1E-11	5.4E-11	5.5E-11
S	5.4E-11	7.7E-11	8.7E-11	8.7E-11	5.2E-11	5.3E-11
SSE	6.9E-11	9.3E-11	1.0E-10	1.0E-10	6.7E-11	6.8E-11
SE	1.0E-10	1.4E-10	1.6E-10	1.6E-10	9.7E-11	9.8E-11
ESE	1.2E-10	1.7E-10	2.0E-10	1.9E-10	1.1E-10	1.1E-10
E	1.6E-10	2.3E-10	2.7E-10	2.7E-10	1.6E-10	1.6E-10
ENE	1.9E-10	2.6E-10	2.9E-10	2.9E-10	1.8E-10	1.8E-10
NE	1.8E-10	2.6E-10	2.9E-10	2.9E-10	1.8E-10	1.8E-10
NNE	1.4E-10	2.0E-10	2.2E-10	2.2E-10	1.3E-10	1.3E-10

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Apr 7, 1998 3:52 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

2.09E-05

At This Location: 1374 Meters East Northeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Building 15 MEPA/HEPA Stacks [G2]

Dataset Name: 97-Z004-G2
Dataset Date: Apr 7, 1998 2:53 pm
Wind File: WNDFILES\97STAR.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 1374 Meters East Northeast
Lifetime Fatal Cancer Risk: 2.45E-10

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	8.08E-08
BREAST	9.03E-08
R MAR	6.63E-06
LUNGS	1.44E-04
THYROID	7.90E-08
ENDOST	8.39E-05
RMNDR	1.12E-06
EFFEC	2.09E-05

RADIONUCLIDE EMISSIONS DURING THE YEAR 1997

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	0.30	7.5E-08	7.5E-08
U-235	Y	1.00	1.9E-08	1.9E-08
U-236	Y	1.00	1.9E-08	1.9E-08
U-238	Y	0.30	8.6E-08	8.6E-08
RA-226	W	1.00	3.6E-11	3.6E-11
RA-228	W	1.00	1.4E-10	1.4E-10
TH-228	Y	1.00	1.1E-08	1.1E-08
TH-230	Y	1.00	5.5E-08	5.5E-08
TH-232	Y	1.00	1.2E-08	1.2E-08
TH-234	Y	1.00	2.3E-07	2.3E-07

SITE INFORMATION

Temperature:	11 degrees C
Precipitation:	102 cm/y
Mixing Height:	950 m

SOURCE INFORMATION

Source Number:	1
Stack Height (m):	14.75
Diameter (m):	0.91
Plume Rise Momentum (m/s): (Exit Velocity)	1.73E+01

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

1374	1643	2013	1916	2622	2247	2239	1735	1411	2347
2415	1802	2307	1654	1993	2083	2035	1766	1798	1913

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Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Apr 7, 1998 3:52 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
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Building 15 MEPA/HEPA Stacks [G2]

Dataset Name: 97-Z004-G2
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Wind File: WNDFILES\97STAR.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	8.08E-08
BREAST	9.03E-08
R MAR	6.63E-06
LUNGS	1.44E-04
THYROID	7.90E-08
ENDOST	8.39E-05
RMNDR	1.12E-06
EFFEC	2.09E-05

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	8.65E-07
INHALATION	2.00E-05
AIR IMMERSION	9.49E-13
GROUND SURFACE	2.81E-08
INTERNAL	2.09E-05
EXTERNAL	2.81E-08
TOTAL	2.09E-05

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	5.97E-06
U-235	8.67E-07
U-236	8.57E-07
U-238	6.14E-06
RA-226	2.79E-10
RA-228	4.68E-10
TH-228	9.35E-07
TH-230	4.65E-06
TH-232	1.48E-06
TH-234	7.60E-09
TOTAL	2.09E-05

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	5.89E-12
BONE	3.87E-12
THYROID	2.19E-14
BREAST	2.30E-13
LUNG	2.32E-10
STOMACH	1.33E-13
BOWEL	1.92E-13
LIVER	2.72E-13
PANCREAS	8.47E-14
URINARY	2.24E-12
OTHER	1.04E-13
TOTAL	2.45E-10

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	4.33E-12
INHALATION	2.40E-10
AIR IMMERSION	2.17E-17
GROUND SURFACE	6.53E-13
INTERNAL	2.44E-10
EXTERNAL	6.53E-13
TOTAL	2.45E-10

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	7.72E-11
U-235	1.13E-11
U-236	1.09E-11
U-238	8.01E-11
RA-226	3.29E-15
RA-228	4.46E-15
TH-228	1.87E-11
TH-230	3.80E-11
TH-232	8.35E-12
TH-234	2.12E-13
TOTAL	2.45E-10

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	1374	1643	2013	1916	2622	2247	2239
N	9.0E-06	7.2E-06	5.7E-06	6.0E-06	4.1E-06	5.0E-06	5.0E-06
NNW	6.1E-06	4.9E-06	3.9E-06	4.1E-06	2.8E-06	3.4E-06	3.4E-06
NW	5.2E-06	4.3E-06	3.4E-06	3.6E-06	2.6E-06	3.0E-06	3.0E-06
WNW	5.2E-06	4.2E-06	3.3E-06	3.5E-06	2.4E-06	2.9E-06	2.9E-06
W	1.0E-05	8.4E-06	6.6E-06	7.0E-06	4.8E-06	5.8E-06	5.8E-06
WSW	1.6E-05	1.3E-05	1.0E-05	1.1E-05	7.0E-06	8.6E-06	8.7E-06
SW	9.7E-06	7.6E-06	5.8E-06	6.2E-06	3.9E-06	4.9E-06	4.9E-06
SSW	6.5E-06	5.3E-06	4.1E-06	4.3E-06	2.9E-06	3.5E-06	3.6E-06
S	6.2E-06	5.0E-06	3.9E-06	4.2E-06	2.8E-06	3.4E-06	3.5E-06
SSE	7.7E-06	6.4E-06	5.2E-06	5.5E-06	3.9E-06	4.6E-06	4.6E-06
SE	1.1E-05	9.3E-06	7.4E-06	7.8E-06	5.5E-06	6.5E-06	6.6E-06
ESE	1.4E-05	1.1E-05	8.5E-06	9.1E-06	6.1E-06	7.4E-06	7.5E-06
E	1.9E-05	1.5E-05	1.2E-05	1.3E-05	8.7E-06	1.1E-05	1.1E-05
ENE	2.1E-05	1.7E-05	1.4E-05	1.5E-05	1.0E-05	1.2E-05	1.2E-05
NE	2.1E-05	1.7E-05	1.3E-05	1.4E-05	9.7E-06	1.2E-05	1.2E-05
NNE	1.6E-05	1.3E-05	9.8E-06	1.0E-05	7.0E-06	8.5E-06	8.6E-06

	Distance (m)						
Direction	1735	1411	2347	2415	1802	2307	1654
N	6.8E-06	8.7E-06	4.7E-06	4.5E-06	6.5E-06	4.8E-06	7.2E-06
NNW	4.6E-06	5.9E-06	3.2E-06	3.1E-06	4.4E-06	3.3E-06	4.9E-06
NW	4.0E-06	5.0E-06	2.9E-06	2.8E-06	3.9E-06	2.9E-06	4.2E-06
WNW	3.9E-06	5.0E-06	2.8E-06	2.7E-06	3.8E-06	2.8E-06	4.2E-06
W	7.9E-06	1.0E-05	5.5E-06	5.3E-06	7.6E-06	5.6E-06	8.3E-06
WSW	1.2E-05	1.6E-05	8.1E-06	7.8E-06	1.2E-05	8.3E-06	1.3E-05
SW	7.1E-06	9.3E-06	4.6E-06	4.4E-06	6.7E-06	4.7E-06	7.5E-06
SSW	4.9E-06	6.3E-06	3.3E-06	3.2E-06	4.7E-06	3.4E-06	5.2E-06
S	4.7E-06	6.1E-06	3.3E-06	3.1E-06	4.5E-06	3.3E-06	5.0E-06
SSE	6.1E-06	7.5E-06	4.4E-06	4.3E-06	5.8E-06	4.5E-06	6.4E-06
SE	8.7E-06	1.1E-05	6.2E-06	6.0E-06	8.4E-06	6.3E-06	9.2E-06
ESE	1.0E-05	1.3E-05	7.0E-06	6.8E-06	9.8E-06	7.2E-06	1.1E-05
E	1.4E-05	1.8E-05	1.0E-05	9.6E-06	1.4E-05	1.0E-05	1.5E-05
ENE	1.6E-05	2.0E-05	1.2E-05	1.1E-05	1.6E-05	1.2E-05	1.7E-05
NE	1.6E-05	2.0E-05	1.1E-05	1.1E-05	1.5E-05	1.1E-05	1.7E-05
NNE	1.2E-05	1.5E-05	8.1E-06	7.8E-06	1.1E-05	8.2E-06	1.3E-05

000230

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1993	2083	2035	1766	1798	1913
N	5.7E-06	5.4E-06	5.6E-06	6.6E-06	6.5E-06	6.0E-06
NNW	3.9E-06	3.7E-06	3.8E-06	4.5E-06	4.4E-06	4.1E-06
NW	3.5E-06	3.3E-06	3.4E-06	3.9E-06	3.9E-06	3.6E-06
WNW	3.4E-06	3.2E-06	3.3E-06	3.9E-06	3.8E-06	3.5E-06
W	6.7E-06	6.4E-06	6.5E-06	7.7E-06	7.6E-06	7.0E-06
WSW	1.0E-05	9.5E-06	9.8E-06	1.2E-05	1.2E-05	1.1E-05
SW	5.8E-06	5.5E-06	5.7E-06	6.9E-06	6.7E-06	6.2E-06
SSW	4.1E-06	3.9E-06	4.0E-06	4.8E-06	4.7E-06	4.4E-06
S	4.0E-06	3.8E-06	3.9E-06	4.6E-06	4.5E-06	4.2E-06
SSE	5.2E-06	5.0E-06	5.1E-06	5.9E-06	5.8E-06	5.5E-06
SE	7.5E-06	7.1E-06	7.3E-06	8.6E-06	8.4E-06	7.8E-06
ESE	8.6E-06	8.2E-06	8.4E-06	1.0E-05	9.8E-06	9.1E-06
E	1.2E-05	1.1E-05	1.2E-05	1.4E-05	1.4E-05	1.3E-05
ENE	1.4E-05	1.3E-05	1.4E-05	1.6E-05	1.6E-05	1.5E-05
NE	1.3E-05	1.3E-05	1.3E-05	1.6E-05	1.5E-05	1.4E-05
NNE	9.9E-06	9.4E-06	9.7E-06	1.2E-05	1.1E-05	1.0E-05

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	1374	1643	2013	1916	2622	2247	2239
N	1.0E-10	8.4E-11	6.6E-11	7.0E-11	4.7E-11	5.7E-11	5.8E-11
NNW	7.1E-11	5.7E-11	4.5E-11	4.7E-11	3.2E-11	3.9E-11	3.9E-11
NW	6.0E-11	4.9E-11	3.9E-11	4.1E-11	2.9E-11	3.5E-11	3.5E-11
WNW	6.0E-11	4.9E-11	3.8E-11	4.0E-11	2.8E-11	3.3E-11	3.4E-11
W	1.2E-10	9.8E-11	7.7E-11	8.2E-11	5.5E-11	6.7E-11	6.7E-11
WSW	1.9E-10	1.5E-10	1.2E-10	1.2E-10	8.1E-11	1.0E-10	1.0E-10
SW	1.1E-10	8.9E-11	6.7E-11	7.2E-11	4.5E-11	5.7E-11	5.7E-11
SSW	7.6E-11	6.1E-11	4.7E-11	5.0E-11	3.3E-11	4.1E-11	4.1E-11
S	7.3E-11	5.8E-11	4.5E-11	4.8E-11	3.2E-11	4.0E-11	4.0E-11
SSE	8.9E-11	7.4E-11	6.0E-11	6.3E-11	4.5E-11	5.3E-11	5.3E-11
SE	1.3E-10	1.1E-10	8.6E-11	9.1E-11	6.3E-11	7.6E-11	7.6E-11
ESE	1.6E-10	1.3E-10	9.9E-11	1.1E-10	7.1E-11	8.6E-11	8.6E-11
E	2.2E-10	1.8E-10	1.4E-10	1.5E-10	1.0E-10	1.2E-10	1.2E-10
ENE	2.4E-10	2.0E-10	1.6E-10	1.7E-10	1.2E-10	1.4E-10	1.4E-10
NE	2.4E-10	2.0E-10	1.6E-10	1.6E-10	1.1E-10	1.4E-10	1.4E-10
NNE	1.9E-10	1.5E-10	1.1E-10	1.2E-10	8.1E-11	9.9E-11	1.0E-10

	Distance (m)						
Direction	1735	1411	2347	2415	1802	2307	1654
N	7.9E-11	1.0E-10	5.4E-11	5.3E-11	7.5E-11	5.6E-11	8.3E-11
NNW	5.3E-11	6.8E-11	3.7E-11	3.6E-11	5.1E-11	3.8E-11	5.7E-11
NW	4.6E-11	5.8E-11	3.3E-11	3.2E-11	4.4E-11	3.4E-11	4.9E-11
WNW	4.5E-11	5.8E-11	3.2E-11	3.1E-11	4.3E-11	3.2E-11	4.8E-11
W	9.2E-11	1.2E-10	6.4E-11	6.1E-11	8.8E-11	6.5E-11	9.7E-11
WSW	1.4E-10	1.8E-10	9.5E-11	9.1E-11	1.3E-10	9.7E-11	1.5E-10
SW	8.2E-11	1.1E-10	5.4E-11	5.1E-11	7.8E-11	5.5E-11	8.8E-11
SSW	5.7E-11	7.4E-11	3.8E-11	3.7E-11	5.4E-11	3.9E-11	6.1E-11
S	5.5E-11	7.0E-11	3.7E-11	3.6E-11	5.2E-11	3.8E-11	5.8E-11
SSE	7.0E-11	8.7E-11	5.1E-11	4.9E-11	6.7E-11	5.2E-11	7.4E-11
SE	1.0E-10	1.3E-10	7.2E-11	7.0E-11	9.7E-11	7.3E-11	1.1E-10
ESE	1.2E-10	1.6E-10	8.1E-11	7.9E-11	1.1E-10	8.3E-11	1.3E-10
E	1.7E-10	2.1E-10	1.2E-10	1.1E-10	1.6E-10	1.2E-10	1.8E-10
ENE	1.9E-10	2.4E-10	1.4E-10	1.3E-10	1.8E-10	1.4E-10	2.0E-10
NE	1.9E-10	2.4E-10	1.3E-10	1.2E-10	1.8E-10	1.3E-10	2.0E-10
NNE	1.4E-10	1.8E-10	9.4E-11	9.0E-11	1.3E-10	9.6E-11	1.5E-10

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INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1993	2083	2035	1766	1798	1913
N	6.6E-11	6.3E-11	6.5E-11	7.7E-11	7.5E-11	7.0E-11
NNW	4.5E-11	4.3E-11	4.4E-11	5.2E-11	5.1E-11	4.8E-11
NW	4.0E-11	3.8E-11	3.9E-11	4.5E-11	4.4E-11	4.2E-11
WNW	3.9E-11	3.7E-11	3.8E-11	4.5E-11	4.4E-11	4.0E-11
W	7.8E-11	7.4E-11	7.6E-11	9.0E-11	8.8E-11	8.2E-11
WSW	1.2E-10	1.1E-10	1.1E-10	1.4E-10	1.4E-10	1.2E-10
SW	6.8E-11	6.4E-11	6.6E-11	8.0E-11	7.8E-11	7.2E-11
SSW	4.8E-11	4.5E-11	4.6E-11	5.6E-11	5.4E-11	5.0E-11
S	4.6E-11	4.3E-11	4.5E-11	5.3E-11	5.2E-11	4.8E-11
SSE	6.1E-11	5.8E-11	5.9E-11	6.9E-11	6.8E-11	6.3E-11
SE	8.7E-11	8.2E-11	8.5E-11	1.0E-10	9.7E-11	9.1E-11
ESE	1.0E-10	9.5E-11	9.8E-11	1.2E-10	1.1E-10	1.1E-10
E	1.4E-10	1.3E-10	1.4E-10	1.6E-10	1.6E-10	1.5E-10
ENE	1.6E-10	1.6E-10	1.6E-10	1.9E-10	1.8E-10	1.7E-10
NE	1.6E-10	1.5E-10	1.5E-10	1.8E-10	1.8E-10	1.7E-10
NNE	1.2E-10	1.1E-10	1.1E-10	1.4E-10	1.3E-10	1.2E-10

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Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Apr 7, 1998 3:53 pm

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Address: P.O. BOX 398704
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State: OH Zip: 45253-8704

Effective Dose Equivalent (mrem/year)
8.80E-04

At This Location: 921 Meters Northeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Building 15 General Exhaust Stacks [G1]

Dataset Name: 97-Z005-G1
Dataset Date: Apr 7, 1998 1:26 pm
Wind File: WNDFILES\97STAR.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 921 Meters Northeast
Lifetime Fatal Cancer Risk: 1.10E-08

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Organ	Dose Equivalent (mrem/y)
GONADS	3.57E-06
BREAST	4.06E-06
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LUNGS	6.48E-03
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Nuclide	Class	Size	Source #1 Ci/y	Source #2 Ci/y	TOTAL Ci/y
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U-236	Y	1.00	1.1E-07	1.1E-07	2.3E-07
U-238	Y	1.00	3.3E-06	3.3E-06	6.6E-06
RA-226	W	1.00	2.1E-09	2.1E-09	4.2E-09
RA-228	W	1.00	8.4E-09	8.4E-09	1.7E-08
TH-228	Y	1.00	8.9E-08	8.9E-08	1.8E-07
TH-230	Y	1.00	2.6E-07	2.6E-07	5.2E-07
TH-232	Y	1.00	1.4E-08	1.4E-08	2.8E-08
TH-234	Y	1.00	1.3E-05	1.3E-05	2.6E-05

SITE INFORMATION

Temperature: 11 degrees C
Precipitation: 102 cm/y
Mixing Height: 950 m

SOURCE INFORMATION

Source Number:	1	2
Stack Height (m):	16.79	16.28
Diameter (m):	1.32	1.22
Plume Rise Momentum (m/s): (Exit Velocity)	1.72E+01	1.52E+01

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

1363	1317	2008	1617	1305	921	979	1035	1068	1204
1199	1207	1133	1135	1763	1317	1182	1186	1811	1796

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Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Apr 7, 1998 3:53 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Building 15 General Exhaust Stacks [G1]

Dataset Name: 97-Z005-G1
Dataset Date: Apr 7, 1998 1:26 pm
Wind File: WNDFILES\97STAR.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	3.57E-06
BREAST	4.06E-06
R MAR	1.39E-04
LUNGS	6.48E-03
THYROID	3.48E-06
ENDOST	1.85E-03
RMNDR	9.44E-05
EFFEC	8.80E-04

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	6.87E-05
INHALATION	8.11E-04
AIR IMMERSION	6.80E-11
GROUND SURFACE	7.09E-07
INTERNAL	8.79E-04
EXTERNAL	7.09E-07
TOTAL	8.80E-04

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	3.81E-04
U-235	1.93E-05
U-236	1.40E-05
U-238	3.79E-04
RA-226	4.39E-08
RA-228	7.43E-08
TH-228	2.04E-05
TH-230	6.01E-05
TH-232	4.59E-06
TH-234	1.20E-06
TOTAL	8.80E-04

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	1.39E-10
BONE	9.22E-11
THYROID	8.01E-13
BREAST	9.06E-12
LUNG	1.06E-08
STOMACH	6.02E-12
BOWEL	1.58E-11
LIVER	6.75E-12
PANCREAS	3.51E-12
URINARY	1.97E-10
OTHER	4.29E-12
TOTAL	1.10E-08

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	3.65E-10
INHALATION	1.07E-08
AIR IMMERSION	1.52E-15
GROUND SURFACE	1.63E-11
INTERNAL	1.10E-08
EXTERNAL	1.63E-11
TOTAL	1.10E-08

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	4.82E-09
U-235	2.51E-10
U-236	1.77E-10
U-238	4.84E-09
RA-226	5.16E-13
RA-228	7.06E-13
TH-228	4.08E-10
TH-230	4.91E-10
TH-232	2.58E-11
TH-234	3.32E-11
TOTAL	1.10E-08

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	1363	1317	2008	1617	1305	921	979
N	2.6E-04	2.7E-04	1.6E-04	2.1E-04	2.7E-04	4.0E-04	3.7E-04
NNW	1.7E-04	1.8E-04	1.1E-04	1.4E-04	1.8E-04	2.5E-04	2.4E-04
NW	1.4E-04	1.5E-04	9.7E-05	1.2E-04	1.5E-04	1.9E-04	1.8E-04
WNW	1.5E-04	1.5E-04	9.7E-05	1.2E-04	1.5E-04	2.1E-04	2.0E-04
W	2.8E-04	2.9E-04	1.9E-04	2.3E-04	2.9E-04	4.0E-04	3.8E-04
WSW	4.5E-04	4.7E-04	2.9E-04	3.7E-04	4.7E-04	6.8E-04	6.4E-04
SW	2.8E-04	2.9E-04	1.7E-04	2.3E-04	2.9E-04	4.2E-04	4.0E-04
SSW	1.8E-04	1.9E-04	1.2E-04	1.5E-04	1.9E-04	2.8E-04	2.6E-04
S	1.8E-04	1.8E-04	1.2E-04	1.5E-04	1.9E-04	2.7E-04	2.5E-04
SSE	2.1E-04	2.1E-04	1.4E-04	1.7E-04	2.1E-04	2.9E-04	2.8E-04
SE	3.2E-04	3.3E-04	2.1E-04	2.6E-04	3.3E-04	4.8E-04	4.6E-04
ESE	4.0E-04	4.1E-04	2.5E-04	3.2E-04	4.2E-04	6.1E-04	5.8E-04
E	5.3E-04	5.5E-04	3.3E-04	4.3E-04	5.6E-04	8.2E-04	7.7E-04
ENE	5.6E-04	5.8E-04	3.7E-04	4.7E-04	5.9E-04	8.4E-04	7.9E-04
NE	5.7E-04	6.0E-04	3.7E-04	4.7E-04	6.0E-04	8.8E-04	8.3E-04
NNE	4.5E-04	4.6E-04	2.8E-04	3.6E-04	4.7E-04	6.9E-04	6.5E-04

	Distance (m)						
Direction	1035	1068	1204	1199	1207	1133	1135
N	3.5E-04	3.4E-04	3.0E-04	3.0E-04	3.0E-04	3.2E-04	3.2E-04
NNW	2.3E-04	2.2E-04	2.0E-04	2.0E-04	2.0E-04	2.1E-04	2.1E-04
NW	1.8E-04	1.7E-04	1.6E-04	1.6E-04	1.6E-04	1.7E-04	1.7E-04
WNW	1.9E-04	1.8E-04	1.7E-04	1.7E-04	1.6E-04	1.7E-04	1.7E-04
W	3.6E-04	3.5E-04	3.1E-04	3.2E-04	3.1E-04	3.3E-04	3.3E-04
WSW	6.0E-04	5.8E-04	5.1E-04	5.2E-04	5.1E-04	5.5E-04	5.5E-04
SW	3.8E-04	3.6E-04	3.2E-04	3.2E-04	3.2E-04	3.4E-04	3.4E-04
SSW	2.5E-04	2.4E-04	2.1E-04	2.1E-04	2.1E-04	2.2E-04	2.2E-04
S	2.4E-04	2.3E-04	2.0E-04	2.0E-04	2.0E-04	2.2E-04	2.2E-04
SSE	2.7E-04	2.6E-04	2.3E-04	2.3E-04	2.3E-04	2.5E-04	2.4E-04
SE	4.3E-04	4.2E-04	3.6E-04	3.7E-04	3.6E-04	3.9E-04	3.9E-04
ESE	5.4E-04	5.2E-04	4.6E-04	4.6E-04	4.6E-04	4.9E-04	4.9E-04
E	7.3E-04	7.0E-04	6.1E-04	6.2E-04	6.1E-04	6.6E-04	6.6E-04
ENE	7.5E-04	7.3E-04	6.4E-04	6.5E-04	6.4E-04	6.9E-04	6.8E-04
NE	7.8E-04	7.6E-04	6.6E-04	6.7E-04	6.6E-04	7.1E-04	7.1E-04
NNE	6.1E-04	5.9E-04	5.2E-04	5.2E-04	5.2E-04	5.5E-04	5.5E-04

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1763	1317	1182	1186	1811	1796
N	1.9E-04	2.7E-04	3.0E-04	3.0E-04	1.8E-04	1.8E-04
NNW	1.3E-04	1.8E-04	2.0E-04	2.0E-04	1.3E-04	1.3E-04
NW	1.1E-04	1.5E-04	1.6E-04	1.6E-04	1.1E-04	1.1E-04
WNW	1.1E-04	1.5E-04	1.7E-04	1.7E-04	1.1E-04	1.1E-04
W	2.1E-04	2.9E-04	3.2E-04	3.2E-04	2.1E-04	2.1E-04
WSW	3.3E-04	4.7E-04	5.2E-04	5.2E-04	3.2E-04	3.3E-04
SW	2.0E-04	2.9E-04	3.3E-04	3.2E-04	2.0E-04	2.0E-04
SSW	1.4E-04	1.9E-04	2.1E-04	2.1E-04	1.4E-04	1.4E-04
S	1.3E-04	1.8E-04	2.1E-04	2.1E-04	1.3E-04	1.3E-04
SSE	1.6E-04	2.1E-04	2.4E-04	2.3E-04	1.6E-04	1.6E-04
SE	2.4E-04	3.3E-04	3.7E-04	3.7E-04	2.3E-04	2.3E-04
ESE	2.9E-04	4.1E-04	4.7E-04	4.7E-04	2.8E-04	2.8E-04
E	3.9E-04	5.5E-04	6.3E-04	6.2E-04	3.8E-04	3.8E-04
ENE	4.3E-04	5.8E-04	6.6E-04	6.5E-04	4.1E-04	4.2E-04
NE	4.3E-04	6.0E-04	6.8E-04	6.7E-04	4.1E-04	4.2E-04
NNE	3.3E-04	4.6E-04	5.3E-04	5.3E-04	3.2E-04	3.2E-04

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m) 1363	1317	2008	1617	1305	921	979
N	3.2E-09	3.3E-09	2.0E-09	2.6E-09	3.3E-09	4.9E-09	4.6E-09
NNW	2.1E-09	2.2E-09	1.3E-09	1.7E-09	2.2E-09	3.1E-09	3.0E-09
NW	1.7E-09	1.8E-09	1.1E-09	1.4E-09	1.8E-09	2.3E-09	2.2E-09
WNW	1.8E-09	1.8E-09	1.1E-09	1.5E-09	1.8E-09	2.5E-09	2.4E-09
W	3.4E-09	3.6E-09	2.3E-09	2.9E-09	3.6E-09	5.0E-09	4.7E-09
WSW	5.6E-09	5.8E-09	3.5E-09	4.6E-09	5.9E-09	8.5E-09	8.0E-09
SW	3.4E-09	3.6E-09	2.1E-09	2.8E-09	3.6E-09	5.3E-09	5.0E-09
SSW	2.3E-09	2.3E-09	1.4E-09	1.9E-09	2.4E-09	3.4E-09	3.2E-09
S	2.2E-09	2.3E-09	1.4E-09	1.8E-09	2.3E-09	3.3E-09	3.1E-09
SSE	2.5E-09	2.6E-09	1.7E-09	2.1E-09	2.6E-09	3.6E-09	3.4E-09
SE	3.9E-09	4.1E-09	2.5E-09	3.2E-09	4.1E-09	6.0E-09	5.6E-09
ESE	4.9E-09	5.1E-09	3.0E-09	4.0E-09	5.2E-09	7.6E-09	7.2E-09
E	6.6E-09	6.9E-09	4.1E-09	5.4E-09	7.0E-09	1.0E-08	9.6E-09
ENE	7.0E-09	7.3E-09	4.6E-09	5.8E-09	7.4E-09	1.1E-08	9.9E-09
NE	7.2E-09	7.5E-09	4.5E-09	5.9E-09	7.6E-09	1.1E-08	1.0E-08
NNE	5.6E-09	5.8E-09	3.5E-09	4.5E-09	5.9E-09	8.7E-09	8.2E-09

Direction	Distance (m) 1035	1068	1204	1199	1207	1133	1135
N	4.4E-09	4.2E-09	3.7E-09	3.7E-09	3.7E-09	3.9E-09	3.9E-09
NNW	2.8E-09	2.7E-09	2.4E-09	2.4E-09	2.4E-09	2.6E-09	2.6E-09
NW	2.2E-09	2.1E-09	1.9E-09	1.9E-09	1.9E-09	2.0E-09	2.0E-09
WNW	2.3E-09	2.2E-09	2.0E-09	2.0E-09	2.0E-09	2.1E-09	2.1E-09
W	4.5E-09	4.4E-09	3.9E-09	3.9E-09	3.9E-09	4.1E-09	4.1E-09
WSW	7.6E-09	7.3E-09	6.4E-09	6.5E-09	6.4E-09	6.9E-09	6.9E-09
SW	4.7E-09	4.5E-09	4.0E-09	4.0E-09	4.0E-09	4.3E-09	4.2E-09
SSW	3.0E-09	2.9E-09	2.6E-09	2.6E-09	2.6E-09	2.8E-09	2.8E-09
S	2.9E-09	2.8E-09	2.5E-09	2.5E-09	2.5E-09	2.7E-09	2.7E-09
SSE	3.3E-09	3.2E-09	2.8E-09	2.8E-09	2.8E-09	3.0E-09	3.0E-09
SE	5.3E-09	5.1E-09	4.5E-09	4.5E-09	4.5E-09	4.8E-09	4.8E-09
ESE	6.8E-09	6.5E-09	5.7E-09	5.7E-09	5.7E-09	6.1E-09	6.1E-09
E	9.1E-09	8.8E-09	7.7E-09	7.7E-09	7.6E-09	8.2E-09	8.2E-09
ENE	9.4E-09	9.1E-09	8.0E-09	8.1E-09	8.0E-09	8.6E-09	8.6E-09
NE	9.8E-09	9.5E-09	8.3E-09	8.3E-09	8.3E-09	8.9E-09	8.9E-09
NNE	7.7E-09	7.4E-09	6.5E-09	6.5E-09	6.4E-09	6.9E-09	6.9E-09

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1763	1317	1182	1186	1811	1796
N	2.3E-09	3.3E-09	3.7E-09	3.7E-09	2.2E-09	2.3E-09
NNW	1.6E-09	2.2E-09	2.5E-09	2.4E-09	1.5E-09	1.5E-09
NW	1.3E-09	1.8E-09	1.9E-09	1.9E-09	1.3E-09	1.3E-09
WNW	1.3E-09	1.8E-09	2.0E-09	2.0E-09	1.3E-09	1.3E-09
W	2.6E-09	3.6E-09	4.0E-09	4.0E-09	2.5E-09	2.6E-09
WSW	4.1E-09	5.8E-09	6.6E-09	6.6E-09	4.0E-09	4.1E-09
SW	2.5E-09	3.6E-09	4.1E-09	4.0E-09	2.4E-09	2.4E-09
SSW	1.7E-09	2.3E-09	2.6E-09	2.6E-09	1.6E-09	1.6E-09
S	1.6E-09	2.3E-09	2.5E-09	2.5E-09	1.6E-09	1.6E-09
SSE	1.9E-09	2.6E-09	2.9E-09	2.9E-09	1.9E-09	1.9E-09
SE	2.9E-09	4.1E-09	4.6E-09	4.6E-09	2.8E-09	2.8E-09
ESE	3.5E-09	5.1E-09	5.8E-09	5.8E-09	3.4E-09	3.5E-09
E	4.8E-09	6.9E-09	7.8E-09	7.8E-09	4.7E-09	4.7E-09
ENE	5.3E-09	7.3E-09	8.2E-09	8.2E-09	5.1E-09	5.2E-09
NE	5.3E-09	7.5E-09	8.5E-09	8.4E-09	5.1E-09	5.2E-09
NNE	4.1E-09	5.8E-09	6.6E-09	6.6E-09	3.9E-09	4.0E-09

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Apr 7, 1998 3:54 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent (mrem/year)
5.65E-04

At This Location: 1374 Meters Northeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Building 15 General Exhaust Stacks [G2]

Dataset Name: 97-Z005-G2
Dataset Date: Apr 7, 1998 1:27 pm
Wind File: WNDFILES\97STAR.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 1374 Meters Northeast
Lifetime Fatal Cancer Risk: 7.10E-09

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	2.32E-06
BREAST	2.64E-06
R MAR	8.94E-05
LUNGS	4.16E-03
THYROID	2.26E-06
ENDOST	1.20E-03
RMNDR	6.12E-05
EFFEC	5.65E-04

RADIONUCLIDE EMISSIONS DURING THE YEAR 1997

Nuclide	Class	Size	Source #1 Ci/y	Source #2 Ci/y	TOTAL Ci/y
U-234	Y	1.00	3.0E-06	3.0E-06	5.9E-06
U-235	Y	1.00	1.6E-07	1.6E-07	3.1E-07
U-236	Y	1.00	1.1E-07	1.1E-07	2.3E-07
U-238	Y	1.00	3.3E-06	3.3E-06	6.6E-06
RA-226	W	1.00	2.1E-09	2.1E-09	4.2E-09
RA-228	W	1.00	8.4E-09	8.4E-09	1.7E-08
TH-228	Y	1.00	8.9E-08	8.9E-08	1.8E-07
TH-230	Y	1.00	2.6E-07	2.6E-07	5.2E-07
TH-232	Y	1.00	1.4E-08	1.4E-08	2.8E-08
TH-234	Y	1.00	1.3E-05	1.3E-05	2.6E-05

SITE INFORMATION

Temperature:	11 degrees C
Precipitation:	102 cm/y
Mixing Height:	950 m

SOURCE INFORMATION

Source Number:	1	2
Stack Height (m):	16.79	16.28
Diameter (m):	1.32	1.22
Plume Rise Momentum (m/s): (Exit Velocity)	1.72E+01	1.52E+01

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

1374	1643	2013	1916	2622	2247	2239	1735	1411	2347
2415	1802	2307	1654	1993	2083	2035	1766	1798	1913

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Apr 7, 1998 3:54 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Building 15 General Exhaust Stacks [G2]

Dataset Name: 97-Z005-G2
Dataset Date: Apr 7, 1998 1:27 pm
Wind File: WNDFILES\97STAR.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	2.32E-06
BREAST	2.64E-06
R MAR	8.94E-05
LUNGS	4.16E-03
THYROID	2.26E-06
ENDOST	1.20E-03
RMNDR	6.12E-05
EFFEC	5.65E-04

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	4.46E-05
INHALATION	5.20E-04
AIR IMMERSION	4.37E-11
GROUND SURFACE	4.61E-07
INTERNAL	5.65E-04
EXTERNAL	4.61E-07
TOTAL	5.66E-04

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	2.45E-04
U-235	1.24E-05
U-236	9.00E-06
U-238	2.44E-04
RA-226	2.84E-08
RA-228	4.80E-08
TH-228	1.31E-05
TH-230	3.86E-05
TH-232	2.95E-06
TH-234	7.74E-07
TOTAL	5.66E-04

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	8.98E-11
BONE	5.95E-11
THYROID	5.20E-13
BREAST	5.89E-12
LUNG	6.79E-09
STOMACH	3.91E-12
BOWEL	1.03E-11
LIVER	4.37E-12
PANCREAS	2.28E-12
URINARY	1.28E-10
OTHER	2.78E-12
TOTAL	7.10E-09

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	2.36E-10
INHALATION	6.85E-09
AIR IMMERSION	9.73E-16
GROUND SURFACE	1.06E-11
INTERNAL	7.08E-09
EXTERNAL	1.06E-11
TOTAL	7.10E-09

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	3.09E-09
U-235	1.62E-10
U-236	1.14E-10
U-238	3.11E-09
RA-226	3.32E-13
RA-228	4.56E-13
TH-228	2.62E-10
TH-230	3.15E-10
TH-232	1.66E-11
TH-234	2.14E-11
TOTAL	7.10E-09

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	1374	1643	2013	1916	2622	2247	2239
N	2.5E-04	2.0E-04	1.6E-04	1.7E-04	1.2E-04	1.4E-04	1.4E-04
NNW	1.7E-04	1.4E-04	1.1E-04	1.1E-04	8.0E-05	9.6E-05	9.6E-05
NW	1.4E-04	1.1E-04	9.3E-05	9.8E-05	7.1E-05	8.3E-05	8.3E-05
WNW	1.4E-04	1.2E-04	9.3E-05	9.8E-05	6.9E-05	8.2E-05	8.2E-05
W	2.7E-04	2.3E-04	1.8E-04	1.9E-04	1.3E-04	1.6E-04	1.6E-04
WSW	4.4E-04	3.6E-04	2.8E-04	3.0E-04	2.0E-04	2.5E-04	2.5E-04
SW	2.7E-04	2.2E-04	1.7E-04	1.8E-04	1.2E-04	1.5E-04	1.5E-04
SSW	1.8E-04	1.5E-04	1.2E-04	1.2E-04	8.5E-05	1.0E-04	1.0E-04
S	1.7E-04	1.4E-04	1.1E-04	1.2E-04	8.2E-05	9.8E-05	9.8E-05
SSE	2.0E-04	1.7E-04	1.4E-04	1.4E-04	1.1E-04	1.2E-04	1.2E-04
SE	3.1E-04	2.5E-04	2.0E-04	2.1E-04	1.5E-04	1.8E-04	1.8E-04
ESE	3.9E-04	3.1E-04	2.4E-04	2.6E-04	1.7E-04	2.1E-04	2.1E-04
E	5.2E-04	4.2E-04	3.3E-04	3.5E-04	2.4E-04	2.9E-04	2.9E-04
ENE	5.5E-04	4.6E-04	3.6E-04	3.8E-04	2.7E-04	3.2E-04	3.2E-04
NE	5.7E-04	4.6E-04	3.6E-04	3.8E-04	2.6E-04	3.2E-04	3.2E-04
NNE	4.4E-04	3.5E-04	2.7E-04	2.9E-04	2.0E-04	2.4E-04	2.4E-04

	Distance (m)						
Direction	1735	1411	2347	2415	1802	2307	1654
N	1.9E-04	2.4E-04	1.3E-04	1.3E-04	1.8E-04	1.3E-04	2.0E-04
NNW	1.3E-04	1.6E-04	9.1E-05	8.8E-05	1.2E-04	9.3E-05	1.4E-04
NW	1.1E-04	1.3E-04	7.9E-05	7.7E-05	1.0E-04	8.1E-05	1.1E-04
WNW	1.1E-04	1.4E-04	7.8E-05	7.6E-05	1.1E-04	8.0E-05	1.2E-04
W	2.1E-04	2.6E-04	1.5E-04	1.5E-04	2.0E-04	1.6E-04	2.2E-04
WSW	3.4E-04	4.3E-04	2.3E-04	2.2E-04	3.2E-04	2.4E-04	3.6E-04
SW	2.0E-04	2.6E-04	1.4E-04	1.3E-04	1.9E-04	1.4E-04	2.2E-04
SSW	1.4E-04	1.7E-04	9.7E-05	9.4E-05	1.3E-04	9.9E-05	1.5E-04
S	1.3E-04	1.7E-04	9.3E-05	9.0E-05	1.3E-04	9.5E-05	1.4E-04
SSE	1.6E-04	2.0E-04	1.2E-04	1.1E-04	1.5E-04	1.2E-04	1.7E-04
SE	2.4E-04	3.0E-04	1.7E-04	1.6E-04	2.3E-04	1.7E-04	2.5E-04
ESE	2.9E-04	3.8E-04	2.0E-04	1.9E-04	2.8E-04	2.0E-04	3.1E-04
E	3.9E-04	5.1E-04	2.7E-04	2.6E-04	3.8E-04	2.8E-04	4.2E-04
ENE	4.3E-04	5.4E-04	3.1E-04	3.0E-04	4.1E-04	3.1E-04	4.5E-04
NE	4.3E-04	5.5E-04	3.0E-04	2.9E-04	4.1E-04	3.1E-04	4.5E-04
NNE	3.3E-04	4.2E-04	2.3E-04	2.2E-04	3.1E-04	2.3E-04	3.5E-04

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INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1993	2083	2035	1766	1798	1913
N	1.6E-04	1.5E-04	1.6E-04	1.8E-04	1.8E-04	1.7E-04
NNW	1.1E-04	1.0E-04	1.1E-04	1.3E-04	1.2E-04	1.1E-04
NW	9.4E-05	9.0E-05	9.2E-05	1.1E-04	1.0E-04	9.8E-05
WNW	9.4E-05	8.9E-05	9.2E-05	1.1E-04	1.1E-04	9.8E-05
W	1.8E-04	1.7E-04	1.8E-04	2.1E-04	2.0E-04	1.9E-04
WSW	2.8E-04	2.7E-04	2.8E-04	3.3E-04	3.2E-04	3.0E-04
SW	1.7E-04	1.6E-04	1.7E-04	2.0E-04	1.9E-04	1.8E-04
SSW	1.2E-04	1.1E-04	1.1E-04	1.3E-04	1.3E-04	1.2E-04
S	1.1E-04	1.1E-04	1.1E-04	1.3E-04	1.3E-04	1.2E-04
SSE	1.4E-04	1.3E-04	1.4E-04	1.6E-04	1.5E-04	1.4E-04
SE	2.0E-04	1.9E-04	2.0E-04	2.3E-04	2.3E-04	2.1E-04
ESE	2.4E-04	2.3E-04	2.4E-04	2.8E-04	2.8E-04	2.6E-04
E	3.3E-04	3.1E-04	3.2E-04	3.9E-04	3.8E-04	3.5E-04
ENE	3.7E-04	3.5E-04	3.6E-04	4.2E-04	4.1E-04	3.9E-04
NE	3.6E-04	3.5E-04	3.6E-04	4.2E-04	4.1E-04	3.8E-04
NNE	2.8E-04	2.6E-04	2.7E-04	3.2E-04	3.2E-04	2.9E-04

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m) 1374	1643	2013	1916	2622	2247	2239
N	3.1E-09	2.5E-09	1.9E-09	2.1E-09	1.4E-09	1.7E-09	1.7E-09
NNW	2.1E-09	1.7E-09	1.3E-09	1.4E-09	9.6E-10	1.2E-09	1.2E-09
NW	1.7E-09	1.4E-09	1.1E-09	1.2E-09	8.4E-10	9.9E-10	1.0E-09
WNW	1.7E-09	1.4E-09	1.1E-09	1.2E-09	8.2E-10	9.8E-10	9.9E-10
W	3.4E-09	2.8E-09	2.2E-09	2.4E-09	1.6E-09	2.0E-09	2.0E-09
WSW	5.5E-09	4.5E-09	3.5E-09	3.7E-09	2.5E-09	3.1E-09	3.1E-09
SW	3.4E-09	2.7E-09	2.1E-09	2.2E-09	1.4E-09	1.8E-09	1.8E-09
SSW	2.2E-09	1.8E-09	1.4E-09	1.5E-09	1.0E-09	1.2E-09	1.2E-09
S	2.1E-09	1.7E-09	1.3E-09	1.4E-09	9.8E-10	1.2E-09	1.2E-09
SSE	2.5E-09	2.1E-09	1.7E-09	1.8E-09	1.3E-09	1.5E-09	1.5E-09
SE	3.8E-09	3.1E-09	2.5E-09	2.6E-09	1.8E-09	2.2E-09	2.2E-09
ESE	4.8E-09	3.9E-09	3.0E-09	3.2E-09	2.1E-09	2.6E-09	2.6E-09
E	6.5E-09	5.2E-09	4.1E-09	4.3E-09	3.0E-09	3.6E-09	3.6E-09
ENE	6.9E-09	5.7E-09	4.5E-09	4.8E-09	3.4E-09	4.0E-09	4.0E-09
NE	7.1E-09	5.7E-09	4.5E-09	4.8E-09	3.3E-09	4.0E-09	4.0E-09
NNE	5.5E-09	4.4E-09	3.4E-09	3.6E-09	2.4E-09	3.0E-09	3.0E-09

Direction	Distance (m) 1735	1411	2347	2415	1802	2307	1654
N	2.3E-09	3.0E-09	1.6E-09	1.6E-09	2.2E-09	1.6E-09	2.5E-09
NNW	1.6E-09	2.0E-09	1.1E-09	1.1E-09	1.5E-09	1.1E-09	1.7E-09
NW	1.3E-09	1.6E-09	9.5E-10	9.2E-10	1.3E-09	9.7E-10	1.4E-09
WNW	1.3E-09	1.7E-09	9.3E-10	9.0E-10	1.3E-09	9.5E-10	1.4E-09
W	2.6E-09	3.3E-09	1.9E-09	1.8E-09	2.5E-09	1.9E-09	2.8E-09
WSW	4.2E-09	5.4E-09	2.9E-09	2.8E-09	4.0E-09	3.0E-09	4.5E-09
SW	2.5E-09	3.3E-09	1.7E-09	1.6E-09	2.4E-09	1.7E-09	2.7E-09
SSW	1.7E-09	2.1E-09	1.2E-09	1.1E-09	1.6E-09	1.2E-09	1.8E-09
S	1.6E-09	2.1E-09	1.1E-09	1.1E-09	1.5E-09	1.1E-09	1.7E-09
SSE	1.9E-09	2.4E-09	1.4E-09	1.4E-09	1.9E-09	1.5E-09	2.0E-09
SE	2.9E-09	3.7E-09	2.1E-09	2.0E-09	2.8E-09	2.1E-09	3.1E-09
ESE	3.6E-09	4.7E-09	2.4E-09	2.4E-09	3.4E-09	2.5E-09	3.8E-09
E	4.9E-09	6.3E-09	3.4E-09	3.3E-09	4.7E-09	3.5E-09	5.2E-09
ENE	5.4E-09	6.7E-09	3.8E-09	3.7E-09	5.1E-09	3.9E-09	5.6E-09
NE	5.4E-09	6.9E-09	3.8E-09	3.6E-09	5.1E-09	3.8E-09	5.7E-09
NNE	4.1E-09	5.3E-09	2.8E-09	2.7E-09	3.9E-09	2.9E-09	4.4E-09

000258

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1993	2083	2035	1766	1798	1913
N	2.0E-09	1.9E-09	1.9E-09	2.3E-09	2.2E-09	2.1E-09
NNW	1.3E-09	1.3E-09	1.3E-09	1.5E-09	1.5E-09	1.4E-09
NW	1.1E-09	1.1E-09	1.1E-09	1.3E-09	1.3E-09	1.2E-09
WNW	1.1E-09	1.1E-09	1.1E-09	1.3E-09	1.3E-09	1.2E-09
W	2.3E-09	2.1E-09	2.2E-09	2.6E-09	2.5E-09	2.4E-09
WSW	3.5E-09	3.4E-09	3.5E-09	4.1E-09	4.0E-09	3.7E-09
SW	2.1E-09	2.0E-09	2.0E-09	2.5E-09	2.4E-09	2.2E-09
SSW	1.4E-09	1.4E-09	1.4E-09	1.7E-09	1.6E-09	1.5E-09
S	1.4E-09	1.3E-09	1.3E-09	1.6E-09	1.5E-09	1.4E-09
SSE	1.7E-09	1.6E-09	1.7E-09	1.9E-09	1.9E-09	1.8E-09
SE	2.5E-09	2.4E-09	2.4E-09	2.9E-09	2.8E-09	2.6E-09
ESE	3.0E-09	2.8E-09	2.9E-09	3.5E-09	3.4E-09	3.2E-09
E	4.1E-09	3.9E-09	4.0E-09	4.8E-09	4.7E-09	4.3E-09
ENE	4.6E-09	4.4E-09	4.5E-09	5.3E-09	5.1E-09	4.8E-09
NE	4.6E-09	4.3E-09	4.4E-09	5.3E-09	5.2E-09	4.8E-09
NNE	3.5E-09	3.3E-09	3.4E-09	4.0E-09	3.9E-09	3.6E-09

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Apr 7, 1998 3:57 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

2.12E-07

At This Location: 858 Meters East Northeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Building 20 Water Plant Lab Hoods [G1]

Dataset Name: 97-Z010-G1
Dataset Date: Apr 7, 1998 1:03 pm
Wind File: WNDFILES\97STAR.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 858 Meters East Northeast
Lifetime Fatal Cancer Risk: 2.77E-12

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	6.60E-10
BREAST	7.53E-10
R MAR	1.61E-08
LUNGS	1.65E-06
THYROID	6.42E-10
ENDOST	2.24E-07
RMNDR	1.81E-08
EFFEC	2.12E-07

RADIONUCLIDE EMISSIONS DURING THE YEAR 1997

Nuclide	Class	Size	Source #1 Ci/y	Source #2 Ci/y	TOTAL Ci/y
U-234	Y	1.00	2.3E-10	2.3E-10	4.7E-10
U-235	Y	1.00	1.3E-11	1.3E-11	2.5E-11
U-236	Y	1.00	8.5E-12	8.5E-12	1.7E-11
U-238	Y	1.00	3.1E-10	3.1E-10	6.2E-10
RA-226	W	1.00	2.1E-13	2.1E-13	4.2E-13
RA-228	W	1.00	8.3E-13	8.3E-13	1.7E-12
TH-228	Y	1.00	8.8E-12	8.8E-12	1.8E-11
TH-230	Y	1.00	6.2E-13	6.2E-13	1.2E-12
TH-232	Y	1.00	1.4E-12	1.4E-12	2.8E-12
TH-234	Y	1.00	1.3E-09	1.3E-09	2.6E-09

SITE INFORMATION

Temperature:	11 degrees C
Precipitation:	102 cm/y
Mixing Height:	950 m

SOURCE INFORMATION

Source Number:	1	2
Stack Height (m):	8.53	8.53
Diameter (m):	0.30	0.30
Plume Rise Momentum (m/s): (Exit Velocity)	9.43E+00	8.87E+00

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

886	858	1711	1466	1244	1225	1417	1501	1537	1686
1683	1687	1583	1572	2137	1607	1248	1218	1459	1345

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Apr 7, 1998 3:57 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Building 20 Water Plant Lab Hoods [G1]

Dataset Name: 97-Z010-G1
Dataset Date: Apr 7, 1998 1:03 pm
Wind File: WNDFILES\97STAR.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	6.60E-10
BREAST	7.53E-10
R MAR	1.61E-08
LUNGS	1.65E-06
THYROID	6.42E-10
ENDOST	2.24E-07
RMNDR	1.81E-08
EFFEC	2.12E-07

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	1.28E-08
INHALATION	1.99E-07
AIR IMMERSION	1.99E-14
GROUND SURFACE	1.32E-10
INTERNAL	2.12E-07
EXTERNAL	1.32E-10
TOTAL	2.12E-07

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	9.00E-08
U-235	4.59E-09
U-236	3.12E-09
U-238	1.06E-07
RA-226	1.11E-11
RA-228	1.78E-11
TH-228	6.20E-09
TH-230	4.34E-10
TH-232	1.40E-09
TH-234	3.00E-10
TOTAL	2.12E-07

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	1.81E-14
BONE	1.19E-14
THYROID	1.48E-16
BREAST	1.69E-15
LUNG	2.69E-12
STOMACH	1.16E-15
BOWEL	3.38E-15
LIVER	1.06E-15
PANCREAS	6.53E-16
URINARY	3.76E-14
OTHER	7.98E-16
TOTAL	2.77E-12

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	6.88E-14
INHALATION	2.70E-12
AIR IMMERSION	4.43E-19
GROUND SURFACE	3.02E-15
INTERNAL	2.77E-12
EXTERNAL	3.02E-15
TOTAL	2.77E-12

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	1.15E-12
U-235	6.02E-14
U-236	4.00E-14
U-238	1.37E-12
RA-226	1.45E-16
RA-228	1.81E-16
TH-228	1.24E-13
TH-230	3.56E-15
TH-232	7.87E-15
TH-234	9.39E-15
TOTAL	2.77E-12

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	886	858	1711	1466	1244	1225	1417
N	7.8E-08	8.1E-08	3.5E-08	4.2E-08	5.1E-08	5.2E-08	4.4E-08
NNW	5.3E-08	5.5E-08	2.4E-08	2.8E-08	3.5E-08	3.5E-08	3.0E-08
NW	5.2E-08	5.4E-08	2.4E-08	2.9E-08	3.4E-08	3.5E-08	3.0E-08
WNW	5.0E-08	5.2E-08	2.4E-08	2.8E-08	3.4E-08	3.4E-08	2.9E-08
W	8.6E-08	9.0E-08	4.0E-08	4.7E-08	5.6E-08	5.7E-08	4.8E-08
WSW	1.2E-07	1.2E-07	4.6E-08	5.7E-08	7.1E-08	7.3E-08	6.0E-08
SW	6.3E-08	6.7E-08	2.6E-08	3.1E-08	3.9E-08	4.0E-08	3.3E-08
SSW	4.9E-08	5.1E-08	2.1E-08	2.5E-08	3.1E-08	3.2E-08	2.6E-08
S	5.1E-08	5.3E-08	2.4E-08	2.8E-08	3.3E-08	3.4E-08	2.9E-08
SSE	7.7E-08	8.0E-08	4.1E-08	4.7E-08	5.4E-08	5.5E-08	4.8E-08
SE	1.1E-07	1.1E-07	6.2E-08	6.9E-08	7.8E-08	7.9E-08	7.1E-08
ESE	1.2E-07	1.2E-07	6.6E-08	7.4E-08	8.4E-08	8.5E-08	7.6E-08
E	1.7E-07	1.8E-07	8.7E-08	1.0E-07	1.2E-07	1.2E-07	1.0E-07
ENE	2.0E-07	2.1E-07	9.4E-08	1.1E-07	1.3E-07	1.4E-07	1.2E-07
NE	1.8E-07	1.9E-07	8.2E-08	9.8E-08	1.2E-07	1.2E-07	1.0E-07
NNE	1.2E-07	1.3E-07	5.4E-08	6.4E-08	7.9E-08	8.0E-08	6.7E-08

	Distance (m)						
Direction	1501	1537	1686	1683	1687	1583	1572
N	4.1E-08	4.0E-08	3.6E-08	3.6E-08	3.6E-08	3.9E-08	3.9E-08
NNW	2.8E-08	2.7E-08	2.4E-08	2.4E-08	2.4E-08	2.6E-08	2.6E-08
NW	2.8E-08	2.7E-08	2.5E-08	2.5E-08	2.4E-08	2.6E-08	2.6E-08
WNW	2.8E-08	2.7E-08	2.5E-08	2.5E-08	2.5E-08	2.6E-08	2.7E-08
W	4.5E-08	4.4E-08	4.0E-08	4.0E-08	4.0E-08	4.3E-08	4.3E-08
WSW	5.5E-08	5.4E-08	4.7E-08	4.7E-08	4.7E-08	5.1E-08	5.2E-08
SW	3.0E-08	3.0E-08	2.6E-08	2.6E-08	2.6E-08	2.8E-08	2.9E-08
SSW	2.5E-08	2.4E-08	2.2E-08	2.2E-08	2.2E-08	2.3E-08	2.3E-08
S	2.7E-08	2.6E-08	2.4E-08	2.4E-08	2.4E-08	2.6E-08	2.6E-08
SSE	4.6E-08	4.5E-08	4.2E-08	4.2E-08	4.2E-08	4.4E-08	4.4E-08
SE	6.8E-08	6.7E-08	6.3E-08	6.3E-08	6.3E-08	6.5E-08	6.6E-08
ESE	7.2E-08	7.1E-08	6.7E-08	6.7E-08	6.7E-08	7.0E-08	7.0E-08
E	9.8E-08	9.6E-08	8.8E-08	8.8E-08	8.8E-08	9.3E-08	9.4E-08
ENE	1.1E-07	1.1E-07	9.5E-08	9.5E-08	9.5E-08	1.0E-07	1.0E-07
NE	9.6E-08	9.3E-08	8.4E-08	8.4E-08	8.4E-08	9.0E-08	9.1E-08
NNE	6.3E-08	6.1E-08	5.5E-08	5.5E-08	5.5E-08	5.9E-08	5.9E-08

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INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	2137	1607	1248	1218	1459	1345
N	2.8E-08	3.8E-08	5.1E-08	5.2E-08	4.2E-08	4.6E-08
NNW	1.9E-08	2.6E-08	3.4E-08	3.5E-08	2.9E-08	3.1E-08
NW	1.9E-08	2.6E-08	3.4E-08	3.5E-08	2.9E-08	3.1E-08
WNW	2.0E-08	2.6E-08	3.4E-08	3.4E-08	2.9E-08	3.1E-08
W	3.1E-08	4.2E-08	5.6E-08	5.7E-08	4.7E-08	5.1E-08
WSW	3.4E-08	5.0E-08	7.1E-08	7.4E-08	5.7E-08	6.4E-08
SW	2.0E-08	2.8E-08	3.9E-08	4.0E-08	3.2E-08	3.5E-08
SSW	1.7E-08	2.3E-08	3.1E-08	3.2E-08	2.6E-08	2.8E-08
S	1.9E-08	2.5E-08	3.3E-08	3.4E-08	2.8E-08	3.1E-08
SSE	3.4E-08	4.3E-08	5.4E-08	5.5E-08	4.7E-08	5.0E-08
SE	5.3E-08	6.5E-08	7.8E-08	7.9E-08	6.9E-08	7.3E-08
ESE	5.6E-08	6.9E-08	8.4E-08	8.6E-08	7.4E-08	7.9E-08
E	7.0E-08	9.2E-08	1.2E-07	1.2E-07	1.0E-07	1.1E-07
ENE	7.3E-08	1.0E-07	1.3E-07	1.4E-07	1.1E-07	1.2E-07
NE	6.4E-08	8.8E-08	1.2E-07	1.2E-07	9.9E-08	1.1E-07
NNE	4.1E-08	5.8E-08	7.9E-08	8.1E-08	6.5E-08	7.2E-08

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m) 886	858	1711	1466	1244	1225	1417
N	1.0E-12	1.1E-12	4.5E-13	5.4E-13	6.6E-13	6.7E-13	5.6E-13
NNW	6.8E-13	7.1E-13	3.0E-13	3.6E-13	4.4E-13	4.5E-13	3.8E-13
NW	6.7E-13	7.0E-13	3.0E-13	3.6E-13	4.4E-13	4.5E-13	3.8E-13
WNW	6.4E-13	6.7E-13	3.1E-13	3.6E-13	4.3E-13	4.4E-13	3.7E-13
W	1.1E-12	1.2E-12	5.1E-13	6.0E-13	7.2E-13	7.3E-13	6.2E-13
WSW	1.5E-12	1.6E-12	6.0E-13	7.4E-13	9.3E-13	9.5E-13	7.7E-13
SW	8.2E-13	8.6E-13	3.3E-13	4.0E-13	5.0E-13	5.1E-13	4.2E-13
SSW	6.3E-13	6.6E-13	2.7E-13	3.2E-13	3.9E-13	4.0E-13	3.4E-13
S	6.6E-13	6.9E-13	3.0E-13	3.5E-13	4.3E-13	4.3E-13	3.7E-13
SSE	1.0E-12	1.0E-12	5.3E-13	6.0E-13	7.0E-13	7.1E-13	6.2E-13
SE	1.4E-12	1.5E-12	8.0E-13	8.9E-13	1.0E-12	1.0E-12	9.1E-13
ESE	1.5E-12	1.6E-12	8.5E-13	9.5E-13	1.1E-12	1.1E-12	9.8E-13
E	2.3E-12	2.4E-12	1.1E-12	1.3E-12	1.5E-12	1.6E-12	1.3E-12
ENE	2.7E-12	2.8E-12	1.2E-12	1.4E-12	1.8E-12	1.8E-12	1.5E-12
NE	2.4E-12	2.5E-12	1.1E-12	1.3E-12	1.6E-12	1.6E-12	1.3E-12
NNE	1.6E-12	1.7E-12	6.9E-13	8.3E-13	1.0E-12	1.0E-12	8.7E-13

Direction	Distance (m) 1501	1537	1686	1683	1687	1583	1572
N	5.3E-13	5.1E-13	4.6E-13	4.6E-13	4.6E-13	4.9E-13	5.0E-13
NNW	3.5E-13	3.4E-13	3.1E-13	3.1E-13	3.1E-13	3.3E-13	3.3E-13
NW	3.5E-13	3.4E-13	3.1E-13	3.1E-13	3.1E-13	3.3E-13	3.4E-13
WNW	3.5E-13	3.4E-13	3.1E-13	3.1E-13	3.1E-13	3.3E-13	3.4E-13
W	5.8E-13	5.7E-13	5.1E-13	5.2E-13	5.1E-13	5.5E-13	5.5E-13
WSW	7.1E-13	6.9E-13	6.1E-13	6.1E-13	6.1E-13	6.6E-13	6.7E-13
SW	3.9E-13	3.8E-13	3.3E-13	3.3E-13	3.3E-13	3.6E-13	3.6E-13
SSW	3.1E-13	3.0E-13	2.7E-13	2.7E-13	2.7E-13	2.9E-13	3.0E-13
S	3.4E-13	3.4E-13	3.0E-13	3.0E-13	3.0E-13	3.2E-13	3.3E-13
SSE	5.9E-13	5.8E-13	5.4E-13	5.4E-13	5.4E-13	5.6E-13	5.7E-13
SE	8.8E-13	8.6E-13	8.1E-13	8.1E-13	8.1E-13	8.4E-13	8.5E-13
ESE	9.4E-13	9.2E-13	8.6E-13	8.6E-13	8.6E-13	9.0E-13	9.1E-13
E	1.3E-12	1.2E-12	1.1E-12	1.1E-12	1.1E-12	1.2E-12	1.2E-12
ENE	1.4E-12	1.4E-12	1.2E-12	1.2E-12	1.2E-12	1.3E-12	1.3E-12
NE	1.2E-12	1.2E-12	1.1E-12	1.1E-12	1.1E-12	1.2E-12	1.2E-12
NNE	8.1E-13	7.9E-13	7.0E-13	7.1E-13	7.0E-13	7.6E-13	7.7E-13

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INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	2137	1607	1248	1218	1459	1345
N	3.5E-13	4.9E-13	6.5E-13	6.7E-13	5.4E-13	6.0E-13
NNW	2.3E-13	3.3E-13	4.4E-13	4.5E-13	3.6E-13	4.0E-13
NW	2.4E-13	3.3E-13	4.4E-13	4.5E-13	3.7E-13	4.0E-13
WNW	2.5E-13	3.3E-13	4.3E-13	4.4E-13	3.6E-13	4.0E-13
W	4.0E-13	5.4E-13	7.2E-13	7.4E-13	6.0E-13	6.6E-13
WSW	4.4E-13	6.5E-13	9.2E-13	9.5E-13	7.4E-13	8.3E-13
SW	2.4E-13	3.5E-13	5.0E-13	5.1E-13	4.0E-13	4.5E-13
SSW	2.1E-13	2.9E-13	3.9E-13	4.1E-13	3.2E-13	3.6E-13
S	2.4E-13	3.2E-13	4.2E-13	4.4E-13	3.5E-13	3.9E-13
SSE	4.4E-13	5.6E-13	6.9E-13	7.1E-13	6.0E-13	6.5E-13
SE	6.8E-13	8.4E-13	1.0E-12	1.0E-12	8.9E-13	9.5E-13
ESE	7.2E-13	8.9E-13	1.1E-12	1.1E-12	9.6E-13	1.0E-12
E	9.1E-13	1.2E-12	1.5E-12	1.6E-12	1.3E-12	1.4E-12
ENE	9.5E-13	1.3E-12	1.7E-12	1.8E-12	1.5E-12	1.6E-12
NE	8.3E-13	1.1E-12	1.5E-12	1.6E-12	1.3E-12	1.4E-12
NNE	5.3E-13	7.5E-13	1.0E-12	1.1E-12	8.4E-13	9.3E-13

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Apr 7, 1998 3:58 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

2.02E-07

At This Location: 890 Meters East Northeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Building 20 Water Plant Lab Hoods [G2]

Dataset Name: 97-Z010-G2
Dataset Date: Apr 7, 1998 1:06 pm
Wind File: WNDFILES\97STAR.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 890 Meters East Northeast
Lifetime Fatal Cancer Risk: 2.64E-12

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	6.21E-10
BREAST	7.11E-10
R MAR	1.52E-08
LUNGS	1.57E-06
THYROID	6.04E-10
ENDOST	2.10E-07
RMNDR	1.69E-08
EFFEC	2.02E-07

RADIONUCLIDE EMISSIONS DURING THE YEAR 1997

Nuclide	Class	Size	Source #1 Ci/y	Source #2 Ci/y	TOTAL Ci/y
U-234	Y	1.00	2.3E-10	2.3E-10	4.7E-10
U-235	Y	1.00	1.3E-11	1.3E-11	2.5E-11
U-236	Y	1.00	8.5E-12	8.5E-12	1.7E-11
U-238	Y	1.00	3.1E-10	3.1E-10	6.2E-10
RA-226	W	1.00	2.1E-13	2.1E-13	4.2E-13
RA-228	W	1.00	8.3E-13	8.3E-13	1.7E-12
TH-228	Y	1.00	8.8E-12	8.8E-12	1.8E-11
TH-230	Y	1.00	6.2E-13	6.2E-13	1.2E-12
TH-232	Y	1.00	1.4E-12	1.4E-12	2.8E-12
TH-234	Y	1.00	1.3E-09	1.3E-09	2.6E-09

SITE INFORMATION

Temperature:	11 degrees C
Precipitation:	102 cm/y
Mixing Height:	950 m

SOURCE INFORMATION

Source Number:	1	2
Stack Height (m):	8.53	8.53
Diameter (m):	0.30	0.30
Plume Rise Momentum (m/s): (Exit Velocity)	9.43E+00	8.87E+00

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

890	1209	2052	1834	2397	2438	2485	1314	1655	2160
2217	1387	2496	1490	1711	1806	1766	2135	2164	1451

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E . A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Apr 7, 1998 3:58 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Building 20 Water Plant Lab Hoods [G2]

Dataset Name: 97-Z010-G2
Dataset Date: Apr 7, 1998 1:06 pm
Wind File: WNDFILES\97STAR.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	6.21E-10
BREAST	7.11E-10
R MAR	1.52E-08
LUNGS	1.57E-06
THYROID	6.04E-10
ENDOST	2.10E-07
RMNDR	1.69E-08
EFFEC	2.02E-07

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	1.20E-08
INHALATION	1.90E-07
AIR IMMERSION	1.90E-14
GROUND SURFACE	1.26E-10
INTERNAL	2.02E-07
EXTERNAL	1.26E-10
TOTAL	2.02E-07

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	8.58E-08
U-235	4.37E-09
U-236	2.97E-09
U-238	1.01E-07
RA-226	1.04E-11
RA-228	1.68E-11
TH-228	5.91E-09
TH-230	4.14E-10
TH-232	1.33E-09
TH-234	2.83E-10
TOTAL	2.02E-07

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	1.70E-14
BONE	1.12E-14
THYROID	1.40E-16
BREAST	1.60E-15
LUNG	2.57E-12
STOMACH	1.09E-15
BOWEL	3.18E-15
LIVER	1.00E-15
PANCREAS	6.15E-16
URINARY	3.52E-14
OTHER	7.52E-16
TOTAL	2.64E-12

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	6.44E-14
INHALATION	2.57E-12
AIR IMMERSION	4.23E-19
GROUND SURFACE	2.89E-15
INTERNAL	2.64E-12
EXTERNAL	2.89E-15
TOTAL	2.64E-12

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	1.10E-12
U-235	5.74E-14
U-236	3.81E-14
U-238	1.31E-12
RA-226	1.38E-16
RA-228	1.71E-16
TH-228	1.19E-13
TH-230	3.39E-15
TH-232	7.51E-15
TH-234	8.93E-15
TOTAL	2.64E-12

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	890	1209	2052	1834	2397	2438	2485
N	7.7E-08	5.2E-08	2.9E-08	3.3E-08	2.4E-08	2.4E-08	2.3E-08
NNW	5.2E-08	3.5E-08	1.9E-08	2.2E-08	1.6E-08	1.6E-08	1.6E-08
NW	5.1E-08	3.5E-08	1.9E-08	2.2E-08	1.6E-08	1.6E-08	1.6E-08
WNW	4.9E-08	3.4E-08	2.0E-08	2.3E-08	1.7E-08	1.7E-08	1.7E-08
W	8.5E-08	5.7E-08	3.2E-08	3.6E-08	2.8E-08	2.7E-08	2.6E-08
WSW	1.2E-07	7.4E-08	3.6E-08	4.2E-08	2.9E-08	2.9E-08	2.8E-08
SW	6.3E-08	4.0E-08	2.0E-08	2.3E-08	1.7E-08	1.6E-08	1.6E-08
SSW	4.8E-08	3.2E-08	1.7E-08	1.9E-08	1.4E-08	1.4E-08	1.4E-08
S	5.0E-08	3.4E-08	1.9E-08	2.2E-08	1.6E-08	1.6E-08	1.6E-08
SSE	7.6E-08	5.5E-08	3.5E-08	3.9E-08	3.1E-08	3.0E-08	3.0E-08
SE	1.1E-07	8.0E-08	5.4E-08	5.9E-08	4.8E-08	4.7E-08	4.7E-08
ESE	1.2E-07	8.6E-08	5.8E-08	6.3E-08	5.1E-08	5.0E-08	4.9E-08
E	1.7E-07	1.2E-07	7.3E-08	8.1E-08	6.3E-08	6.1E-08	6.0E-08
ENE	2.0E-07	1.4E-07	7.6E-08	8.6E-08	6.4E-08	6.3E-08	6.1E-08
NE	1.8E-07	1.2E-07	6.7E-08	7.6E-08	5.6E-08	5.5E-08	5.3E-08
NNE	1.2E-07	8.1E-08	4.3E-08	4.9E-08	3.6E-08	3.5E-08	3.4E-08

	Distance (m)						
Direction	1314	1655	2160	2217	1387	2496	1490
N	4.7E-08	3.6E-08	2.7E-08	2.6E-08	4.5E-08	2.3E-08	4.1E-08
NNW	3.2E-08	2.5E-08	1.8E-08	1.8E-08	3.0E-08	1.5E-08	2.8E-08
NW	3.2E-08	2.5E-08	1.8E-08	1.8E-08	3.0E-08	1.6E-08	2.8E-08
WNW	3.1E-08	2.5E-08	1.9E-08	1.9E-08	3.0E-08	1.7E-08	2.8E-08
W	5.2E-08	4.1E-08	3.1E-08	3.0E-08	4.9E-08	2.6E-08	4.5E-08
WSW	6.6E-08	4.8E-08	3.4E-08	3.2E-08	6.1E-08	2.8E-08	5.6E-08
SW	3.6E-08	2.7E-08	1.9E-08	1.8E-08	3.3E-08	1.6E-08	3.0E-08
SSW	2.9E-08	2.2E-08	1.6E-08	1.6E-08	2.7E-08	1.4E-08	2.5E-08
S	3.1E-08	2.4E-08	1.8E-08	1.8E-08	2.9E-08	1.6E-08	2.7E-08
SSE	5.1E-08	4.2E-08	3.4E-08	3.3E-08	4.9E-08	3.0E-08	4.6E-08
SE	7.4E-08	6.3E-08	5.2E-08	5.1E-08	7.1E-08	4.6E-08	6.8E-08
ESE	8.0E-08	6.7E-08	5.5E-08	5.4E-08	7.7E-08	4.9E-08	7.3E-08
E	1.1E-07	8.9E-08	6.9E-08	6.8E-08	1.1E-07	6.0E-08	9.9E-08
ENE	1.3E-07	9.7E-08	7.2E-08	7.0E-08	1.2E-07	6.1E-08	1.1E-07
NE	1.1E-07	8.5E-08	6.3E-08	6.1E-08	1.0E-07	5.3E-08	9.6E-08
NNE	7.3E-08	5.5E-08	4.0E-08	3.9E-08	6.9E-08	3.4E-08	6.3E-08

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INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1711	1806	1766	2135	2164	1451
N	3.5E-08	3.3E-08	3.4E-08	2.8E-08	2.7E-08	4.2E-08
NNW	2.4E-08	2.2E-08	2.3E-08	1.8E-08	1.8E-08	2.9E-08
NW	2.4E-08	2.2E-08	2.3E-08	1.9E-08	1.8E-08	2.9E-08
WNW	2.4E-08	2.3E-08	2.3E-08	1.9E-08	1.9E-08	2.8E-08
W	3.9E-08	3.7E-08	3.8E-08	3.1E-08	3.1E-08	4.7E-08
WSW	4.6E-08	4.3E-08	4.4E-08	3.4E-08	3.4E-08	5.8E-08
SW	2.6E-08	2.4E-08	2.5E-08	1.9E-08	1.9E-08	3.2E-08
SSW	2.1E-08	2.0E-08	2.0E-08	1.6E-08	1.6E-08	2.5E-08
S	2.3E-08	2.2E-08	2.3E-08	1.9E-08	1.8E-08	2.8E-08
SSE	4.1E-08	3.9E-08	4.0E-08	3.4E-08	3.4E-08	4.7E-08
SE	6.2E-08	5.9E-08	6.0E-08	5.3E-08	5.2E-08	6.9E-08
ESE	6.6E-08	6.3E-08	6.4E-08	5.6E-08	5.5E-08	7.4E-08
E	8.7E-08	8.2E-08	8.4E-08	7.0E-08	6.9E-08	1.0E-07
ENE	9.3E-08	8.8E-08	9.0E-08	7.3E-08	7.2E-08	1.1E-07
NE	8.2E-08	7.7E-08	7.9E-08	6.4E-08	6.3E-08	9.9E-08
NNE	5.3E-08	5.0E-08	5.1E-08	4.1E-08	4.0E-08	6.5E-08

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m) 890	1209	2052	1834	2397	2438	2485
N	1.0E-12	6.8E-13	3.7E-13	4.2E-13	3.1E-13	3.0E-13	3.0E-13
NNW	6.8E-13	4.6E-13	2.4E-13	2.8E-13	2.0E-13	2.0E-13	1.9E-13
NW	6.6E-13	4.5E-13	2.5E-13	2.8E-13	2.1E-13	2.0E-13	2.0E-13
WNW	6.3E-13	4.4E-13	2.6E-13	2.9E-13	2.2E-13	2.1E-13	2.1E-13
W	1.1E-12	7.4E-13	4.2E-13	4.7E-13	3.5E-13	3.4E-13	3.4E-13
WSW	1.5E-12	9.6E-13	4.6E-13	5.4E-13	3.7E-13	3.6E-13	3.5E-13
SW	8.1E-13	5.2E-13	2.6E-13	3.0E-13	2.1E-13	2.0E-13	2.0E-13
SSW	6.2E-13	4.1E-13	2.1E-13	2.4E-13	1.8E-13	1.7E-13	1.7E-13
S	6.5E-13	4.4E-13	2.4E-13	2.8E-13	2.1E-13	2.0E-13	2.0E-13
SSE	9.9E-13	7.1E-13	4.5E-13	5.0E-13	3.9E-13	3.9E-13	3.8E-13
SE	1.4E-12	1.0E-12	7.0E-13	7.6E-13	6.2E-13	6.1E-13	6.0E-13
ESE	1.5E-12	1.1E-12	7.5E-13	8.1E-13	6.6E-13	6.5E-13	6.4E-13
E	2.3E-12	1.6E-12	9.5E-13	1.1E-12	8.1E-13	8.0E-13	7.8E-13
ENE	2.6E-12	1.8E-12	9.9E-13	1.1E-12	8.3E-13	8.1E-13	7.9E-13
NE	2.4E-12	1.6E-12	8.6E-13	9.8E-13	7.2E-13	7.1E-13	6.9E-13
NNE	1.6E-12	1.1E-12	5.5E-13	6.3E-13	4.6E-13	4.5E-13	4.4E-13

Direction	Distance (m) 1314	1655	2160	2217	1387	2496	1490
N	6.1E-13	4.7E-13	3.5E-13	3.4E-13	5.7E-13	2.9E-13	5.3E-13
NNW	4.1E-13	3.1E-13	2.3E-13	2.2E-13	3.9E-13	1.9E-13	3.5E-13
NW	4.1E-13	3.1E-13	2.3E-13	2.3E-13	3.9E-13	2.0E-13	3.5E-13
WNW	4.0E-13	3.2E-13	2.4E-13	2.4E-13	3.8E-13	2.1E-13	3.5E-13
W	6.8E-13	5.2E-13	3.9E-13	3.8E-13	6.4E-13	3.4E-13	5.9E-13
WSW	8.6E-13	6.2E-13	4.3E-13	4.2E-13	7.9E-13	3.5E-13	7.2E-13
SW	4.6E-13	3.4E-13	2.4E-13	2.3E-13	4.3E-13	2.0E-13	3.9E-13
SSW	3.7E-13	2.8E-13	2.0E-13	1.9E-13	3.4E-13	1.7E-13	3.1E-13
S	4.0E-13	3.1E-13	2.3E-13	2.2E-13	3.7E-13	2.0E-13	3.4E-13
SSE	6.6E-13	5.4E-13	4.3E-13	4.2E-13	6.3E-13	3.8E-13	5.9E-13
SE	9.6E-13	8.2E-13	6.7E-13	6.6E-13	9.3E-13	6.0E-13	8.8E-13
ESE	1.0E-12	8.7E-13	7.2E-13	7.0E-13	9.9E-13	6.4E-13	9.4E-13
E	1.5E-12	1.2E-12	9.0E-13	8.8E-13	1.4E-12	7.8E-13	1.3E-12
ENE	1.6E-12	1.3E-12	9.3E-13	9.1E-13	1.5E-12	7.9E-13	1.4E-12
NE	1.5E-12	1.1E-12	8.1E-13	7.9E-13	1.4E-12	6.9E-13	1.2E-12
NNE	9.5E-13	7.2E-13	5.2E-13	5.0E-13	8.9E-13	4.4E-13	8.2E-13

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INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1711	1806	1766	2135	2164	1451
N	4.5E-13	4.2E-13	4.4E-13	3.5E-13	3.5E-13	5.4E-13
NNW	3.0E-13	2.8E-13	2.9E-13	2.3E-13	2.3E-13	3.6E-13
NW	3.0E-13	2.8E-13	2.9E-13	2.4E-13	2.3E-13	3.7E-13
WNW	3.1E-13	2.9E-13	3.0E-13	2.5E-13	2.4E-13	3.6E-13
W	5.1E-13	4.8E-13	4.9E-13	4.0E-13	3.9E-13	6.0E-13
WSW	5.9E-13	5.5E-13	5.7E-13	4.4E-13	4.3E-13	7.5E-13
SW	3.2E-13	3.0E-13	3.1E-13	2.4E-13	2.4E-13	4.0E-13
SSW	2.7E-13	2.5E-13	2.6E-13	2.0E-13	2.0E-13	3.2E-13
S	3.0E-13	2.8E-13	2.9E-13	2.3E-13	2.3E-13	3.6E-13
SSE	5.3E-13	5.1E-13	5.1E-13	4.4E-13	4.3E-13	6.1E-13
SE	8.0E-13	7.7E-13	7.8E-13	6.8E-13	6.7E-13	9.0E-13
ESE	8.5E-13	8.2E-13	8.3E-13	7.2E-13	7.2E-13	9.6E-13
E	1.1E-12	1.1E-12	1.1E-12	9.1E-13	9.0E-13	1.3E-12
ENE	1.2E-12	1.1E-12	1.2E-12	9.5E-13	9.3E-13	1.5E-12
NE	1.1E-12	1.0E-12	1.0E-12	8.2E-13	8.1E-13	1.3E-12
NNE	6.9E-13	6.5E-13	6.6E-13	5.3E-13	5.2E-13	8.4E-13

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Apr 7, 1998 4:00 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent (mrem/year)
4.50E-06

At This Location: 924 Meters East

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Building 20 Cooling Water Tower [G1]

Dataset Name: 97-Z012-G1
Dataset Date: Apr 7, 1998 1:13 pm
Wind File: WNDFILES\97STAR.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 924 Meters East
Lifetime Fatal Cancer Risk: 5.65E-11

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	2.82E-08
BREAST	3.22E-08
R MAR	6.60E-07
LUNGS	3.25E-05
THYROID	2.74E-08
ENDOST	9.22E-06
RMNDR	7.89E-07
EFFEC	4.50E-06

RADIONUCLIDE EMISSIONS DURING THE YEAR 1997

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	1.00	6.8E-08	6.8E-08
U-235	Y	1.00	3.6E-09	3.6E-09
U-236	Y	1.00	2.5E-09	2.5E-09
U-238	Y	1.00	8.9E-08	8.9E-08
RA-226	W	1.00	6.1E-11	6.1E-11
RA-228	W	1.00	2.4E-10	2.4E-10
TH-228	Y	1.00	2.6E-09	2.6E-09
TH-230	Y	1.00	1.8E-10	1.8E-10
TH-232	Y	1.00	4.0E-10	4.0E-10
TH-234	Y	1.00	3.8E-07	3.8E-07

SITE INFORMATION

Temperature: 11 degrees C
Precipitation: 102 cm/y
Mixing Height: 950 m

SOURCE INFORMATION

Source Number:	1
Stack Height (m):	14.86
Diameter (m):	8.69
Plume Rise Momentum (m/s): (Exit Velocity)	7.16E+00

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

948	924	1778	1520	1287	1218	1385	1462	1496	1639
1634	1630	1519	1506	2068	1538	1189	1161	1460	1374

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Apr 7, 1998 4:00 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Building 20 Cooling Water Tower [G1]

Dataset Name: 97-Z012-G1
Dataset Date: Apr 7, 1998 1:13 pm
Wind File: WNDFILES\97STAR.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	2.82E-08
BREAST	3.22E-08
R MAR	6.60E-07
LUNGS	3.25E-05
THYROID	2.74E-08
ENDOST	9.22E-06
RMNDR	7.89E-07
EFFEC	4.50E-06

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	5.73E-07
INHALATION	3.93E-06
AIR IMMERSION	3.92E-13
GROUND SURFACE	5.67E-09
INTERNAL	4.50E-06
EXTERNAL	5.67E-09
TOTAL	4.51E-06

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	1.91E-06
U-235	1.00E-07
U-236	6.64E-08
U-238	2.25E-06
RA-226	3.68E-10
RA-228	6.58E-10
TH-228	1.23E-07
TH-230	8.74E-09
TH-232	2.79E-08
TH-234	1.02E-08
TOTAL	4.51E-06

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	7.49E-13
BONE	4.91E-13
THYROID	6.36E-15
BREAST	7.26E-14
LUNG	5.32E-11
STOMACH	4.89E-14
BOWEL	1.38E-13
LIVER	4.24E-14
PANCREAS	2.79E-14
URINARY	1.66E-12
OTHER	3.41E-14
TOTAL	5.65E-11

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	3.08E-12
INHALATION	5.32E-11
AIR IMMERSION	8.73E-18
GROUND SURFACE	1.30E-13
INTERNAL	5.63E-11
EXTERNAL	1.30E-13
TOTAL	5.65E-11

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	2.35E-11
U-235	1.28E-12
U-236	8.14E-13
U-238	2.80E-11
RA-226	3.66E-15
RA-228	5.75E-15
TH-228	2.46E-12
TH-230	7.08E-14
TH-232	1.56E-13
TH-234	2.33E-13
TOTAL	5.65E-11

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	948	924	1778	1520	1287	1218	1385
N	2.1E-06	2.1E-06	1.4E-06	1.6E-06	1.8E-06	1.9E-06	1.7E-06
NNW	9.3E-07	9.2E-07	8.0E-07	8.6E-07	9.1E-07	9.3E-07	9.0E-07
NW	6.2E-07	6.2E-07	5.3E-07	5.6E-07	5.9E-07	6.0E-07	5.8E-07
WNW	7.9E-07	7.9E-07	6.1E-07	6.6E-07	7.2E-07	7.3E-07	6.9E-07
W	1.6E-06	1.7E-06	1.2E-06	1.3E-06	1.5E-06	1.5E-06	1.4E-06
WSW	3.6E-06	3.6E-06	2.3E-06	2.6E-06	3.0E-06	3.1E-06	2.8E-06
SW	2.3E-06	2.3E-06	1.4E-06	1.7E-06	1.9E-06	2.0E-06	1.8E-06
SSW	1.6E-06	1.6E-06	9.4E-07	1.1E-06	1.3E-06	1.3E-06	1.2E-06
S	1.5E-06	1.5E-06	9.0E-07	1.0E-06	1.2E-06	1.2E-06	1.1E-06
SSE	1.5E-06	1.6E-06	9.1E-07	1.0E-06	1.2E-06	1.3E-06	1.1E-06
SE	2.5E-06	2.5E-06	1.6E-06	1.8E-06	2.1E-06	2.2E-06	2.0E-06
ESE	3.2E-06	3.2E-06	2.1E-06	2.4E-06	2.7E-06	2.8E-06	2.5E-06
E	4.4E-06	4.5E-06	2.7E-06	3.1E-06	3.6E-06	3.7E-06	3.4E-06
ENE	4.0E-06	4.0E-06	2.6E-06	3.0E-06	3.3E-06	3.5E-06	3.2E-06
NE	4.3E-06	4.3E-06	2.9E-06	3.3E-06	3.7E-06	3.8E-06	3.5E-06
NNE	3.6E-06	3.6E-06	2.4E-06	2.8E-06	3.1E-06	3.2E-06	3.0E-06

	Distance (m)						
Direction	1462	1496	1639	1634	1630	1519	1506
N	1.6E-06	1.6E-06	1.5E-06	1.5E-06	1.5E-06	1.6E-06	1.6E-06
NNW	8.8E-07	8.7E-07	8.3E-07	8.4E-07	8.4E-07	8.6E-07	8.7E-07
NW	5.7E-07	5.7E-07	5.5E-07	5.5E-07	5.5E-07	5.6E-07	5.6E-07
WNW	6.8E-07	6.7E-07	6.4E-07	6.4E-07	6.4E-07	6.6E-07	6.7E-07
W	1.4E-06	1.3E-06	1.3E-06	1.3E-06	1.3E-06	1.3E-06	1.3E-06
WSW	2.7E-06	2.6E-06	2.4E-06	2.4E-06	2.4E-06	2.6E-06	2.6E-06
SW	1.7E-06	1.7E-06	1.6E-06	1.6E-06	1.6E-06	1.7E-06	1.7E-06
SSW	1.1E-06	1.1E-06	1.0E-06	1.0E-06	1.0E-06	1.1E-06	1.1E-06
S	1.1E-06	1.0E-06	9.6E-07	9.6E-07	9.7E-07	1.0E-06	1.0E-06
SSE	1.1E-06	1.1E-06	9.8E-07	9.8E-07	9.8E-07	1.0E-06	1.0E-06
SE	1.9E-06	1.9E-06	1.7E-06	1.7E-06	1.7E-06	1.8E-06	1.9E-06
ESE	2.4E-06	2.4E-06	2.2E-06	2.2E-06	2.2E-06	2.4E-06	2.4E-06
E	3.2E-06	3.1E-06	2.9E-06	2.9E-06	2.9E-06	3.1E-06	3.1E-06
ENE	3.1E-06	3.0E-06	2.8E-06	2.8E-06	2.8E-06	3.0E-06	3.0E-06
NE	3.4E-06	3.4E-06	3.1E-06	3.1E-06	3.2E-06	3.3E-06	3.3E-06
NNE	2.9E-06	2.8E-06	2.6E-06	2.6E-06	2.6E-06	2.8E-06	2.8E-06

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	2068	1538	1189	1161	1460	1374
N	1.2E-06	1.6E-06	1.9E-06	1.9E-06	1.6E-06	1.7E-06
NNW	7.3E-07	8.6E-07	9.3E-07	9.3E-07	8.8E-07	9.0E-07
NW	4.9E-07	5.6E-07	6.1E-07	6.1E-07	5.7E-07	5.8E-07
WNW	5.6E-07	6.6E-07	7.4E-07	7.5E-07	6.8E-07	7.0E-07
W	1.1E-06	1.3E-06	1.5E-06	1.5E-06	1.4E-06	1.4E-06
WSW	1.9E-06	2.6E-06	3.1E-06	3.2E-06	2.7E-06	2.8E-06
SW	1.3E-06	1.6E-06	2.0E-06	2.0E-06	1.7E-06	1.8E-06
SSW	8.1E-07	1.1E-06	1.3E-06	1.4E-06	1.1E-06	1.2E-06
S	7.8E-07	1.0E-06	1.3E-06	1.3E-06	1.1E-06	1.1E-06
SSE	8.0E-07	1.0E-06	1.3E-06	1.3E-06	1.1E-06	1.1E-06
SE	1.4E-06	1.8E-06	2.2E-06	2.2E-06	1.9E-06	2.0E-06
ESE	1.8E-06	2.3E-06	2.8E-06	2.9E-06	2.4E-06	2.5E-06
E	2.3E-06	3.1E-06	3.8E-06	3.9E-06	3.2E-06	3.4E-06
ENE	2.3E-06	3.0E-06	3.5E-06	3.6E-06	3.1E-06	3.2E-06
NE	2.6E-06	3.3E-06	3.9E-06	3.9E-06	3.4E-06	3.6E-06
NNE	2.1E-06	2.7E-06	3.3E-06	3.3E-06	2.9E-06	3.0E-06

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m) 948	924	1778	1520	1287	1218	1385
N	2.6E-11	2.6E-11	1.7E-11	2.0E-11	2.2E-11	2.3E-11	2.1E-11
NNW	1.1E-11	1.1E-11	9.6E-12	1.0E-11	1.1E-11	1.1E-11	1.1E-11
NW	7.0E-12	7.0E-12	6.0E-12	6.4E-12	6.7E-12	6.8E-12	6.6E-12
WNW	9.1E-12	9.1E-12	7.0E-12	7.7E-12	8.3E-12	8.5E-12	8.1E-12
W	2.0E-11	2.0E-11	1.5E-11	1.6E-11	1.8E-11	1.8E-11	1.7E-11
WSW	4.5E-11	4.6E-11	2.8E-11	3.3E-11	3.7E-11	3.9E-11	3.5E-11
SW	2.9E-11	2.9E-11	1.8E-11	2.1E-11	2.4E-11	2.5E-11	2.2E-11
SSW	2.0E-11	2.0E-11	1.1E-11	1.3E-11	1.5E-11	1.6E-11	1.4E-11
S	1.8E-11	1.8E-11	1.1E-11	1.2E-11	1.4E-11	1.5E-11	1.4E-11
SSE	1.9E-11	1.9E-11	1.1E-11	1.2E-11	1.4E-11	1.5E-11	1.3E-11
SE	3.0E-11	3.1E-11	2.0E-11	2.3E-11	2.6E-11	2.7E-11	2.4E-11
ESE	3.9E-11	4.0E-11	2.6E-11	2.9E-11	3.3E-11	3.4E-11	3.2E-11
E	5.6E-11	5.6E-11	3.4E-11	3.9E-11	4.5E-11	4.7E-11	4.2E-11
ENE	5.0E-11	5.0E-11	3.3E-11	3.7E-11	4.2E-11	4.3E-11	4.0E-11
NE	5.4E-11	5.4E-11	3.7E-11	4.2E-11	4.7E-11	4.8E-11	4.5E-11
NNE	4.6E-11	4.6E-11	3.1E-11	3.5E-11	4.0E-11	4.1E-11	3.8E-11

Direction	Distance (m) 1462	1496	1639	1634	1630	1519	1506
N	2.0E-11	2.0E-11	1.9E-11	1.9E-11	1.9E-11	2.0E-11	2.0E-11
NNW	1.1E-11	1.0E-11	1.0E-11	1.0E-11	1.0E-11	1.0E-11	1.0E-11
NW	6.5E-12	6.4E-12	6.2E-12	6.2E-12	6.2E-12	6.4E-12	6.4E-12
WNW	7.9E-12	7.8E-12	7.4E-12	7.4E-12	7.4E-12	7.7E-12	7.7E-12
W	1.6E-11	1.6E-11	1.5E-11	1.5E-11	1.5E-11	1.6E-11	1.6E-11
WSW	3.4E-11	3.3E-11	3.1E-11	3.1E-11	3.1E-11	3.3E-11	3.3E-11
SW	2.1E-11	2.1E-11	1.9E-11	2.0E-11	2.0E-11	2.1E-11	2.1E-11
SSW	1.4E-11	1.3E-11	1.2E-11	1.2E-11	1.2E-11	1.3E-11	1.3E-11
S	1.3E-11	1.3E-11	1.2E-11	1.2E-11	1.2E-11	1.2E-11	1.3E-11
SSE	1.3E-11	1.3E-11	1.2E-11	1.2E-11	1.2E-11	1.2E-11	1.3E-11
SE	2.3E-11	2.3E-11	2.1E-11	2.1E-11	2.1E-11	2.3E-11	2.3E-11
ESE	3.0E-11	3.0E-11	2.8E-11	2.8E-11	2.8E-11	2.9E-11	3.0E-11
E	4.0E-11	3.9E-11	3.6E-11	3.7E-11	3.7E-11	3.9E-11	3.9E-11
ENE	3.8E-11	3.8E-11	3.5E-11	3.5E-11	3.5E-11	3.7E-11	3.7E-11
NE	4.3E-11	4.2E-11	4.0E-11	4.0E-11	4.0E-11	4.2E-11	4.2E-11
NNE	3.6E-11	3.5E-11	3.3E-11	3.3E-11	3.3E-11	3.5E-11	3.5E-11

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	2068	1538	1189	1161	1460	1374
N	1.5E-11	2.0E-11	2.4E-11	2.4E-11	2.0E-11	2.1E-11
NNW	8.7E-12	1.0E-11	1.1E-11	1.1E-11	1.1E-11	1.1E-11
NW	5.6E-12	6.4E-12	6.9E-12	6.9E-12	6.5E-12	6.6E-12
WNW	6.4E-12	7.6E-12	8.6E-12	8.7E-12	7.9E-12	8.1E-12
W	1.3E-11	1.6E-11	1.8E-11	1.9E-11	1.7E-11	1.7E-11
WSW	2.5E-11	3.2E-11	4.0E-11	4.0E-11	3.4E-11	3.6E-11
SW	1.6E-11	2.1E-11	2.5E-11	2.6E-11	2.2E-11	2.3E-11
SSW	9.8E-12	1.3E-11	1.7E-11	1.7E-11	1.4E-11	1.5E-11
S	9.4E-12	1.2E-11	1.5E-11	1.6E-11	1.3E-11	1.4E-11
SSE	9.5E-12	1.2E-11	1.5E-11	1.6E-11	1.3E-11	1.4E-11
SE	1.7E-11	2.2E-11	2.7E-11	2.7E-11	2.3E-11	2.4E-11
ESE	2.2E-11	2.9E-11	3.5E-11	3.6E-11	3.0E-11	3.2E-11
E	2.9E-11	3.9E-11	4.8E-11	4.8E-11	4.0E-11	4.2E-11
ENE	2.9E-11	3.7E-11	4.4E-11	4.5E-11	3.8E-11	4.0E-11
NE	3.2E-11	4.2E-11	4.9E-11	5.0E-11	4.3E-11	4.5E-11
NNE	2.6E-11	3.5E-11	4.2E-11	4.2E-11	3.6E-11	3.8E-11

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Apr 7, 1998 4:00 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

4.44E-06

At This Location: 940 Meters East

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Building 20 Cooling Water Tower [G2]

Dataset Name: 97-Z012-G2
Dataset Date: Apr 7, 1998 1:15 pm
Wind File: WNDFILES\97STAR.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 940 Meters East
Lifetime Fatal Cancer Risk: 5.58E-11

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	2.72E-08
BREAST	3.12E-08
R MAR	6.34E-07
LUNGS	3.22E-05
THYROID	2.65E-08
ENDOST	8.85E-06
RMNDR	7.57E-07
EFFEC	4.44E-06

RADIONUCLIDE EMISSIONS DURING THE YEAR 1997

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	1.00	6.8E-08	6.8E-08
U-235	Y	1.00	3.6E-09	3.6E-09
U-236	Y	1.00	2.5E-09	2.5E-09
U-238	Y	1.00	8.9E-08	8.9E-08
RA-226	W	1.00	6.1E-11	6.1E-11
RA-228	W	1.00	2.4E-10	2.4E-10
TH-228	Y	1.00	2.6E-09	2.6E-09
TH-230	Y	1.00	1.8E-10	1.8E-10
TH-232	Y	1.00	4.0E-10	4.0E-10
TH-234	Y	1.00	3.8E-07	3.8E-07

SITE INFORMATION

Temperature: 11 degrees C
Precipitation: 102 cm/y
Mixing Height: 950 m

SOURCE INFORMATION

Source Number:	1
Stack Height (m):	14.86
Diameter (m):	8.69
Plume Rise Momentum (m/s): (Exit Velocity)	7.16E+00

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

940	1277	2087	1792	2376	2453	2418	1383	1597	2132
2191	1456	2512	1545	1776	1871	1830	2121	2150	1485

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Apr 7, 1998 4:00 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Building 20 Cooling Water Tower [G2]

Dataset Name: 97-Z012-G2
Dataset Date: Apr 7, 1998 1:15 pm
Wind File: WNDFILES\97STAR.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	2.72E-08
BREAST	3.12E-08
R MAR	6.34E-07
LUNGS	3.22E-05
THYROID	2.65E-08
ENDOST	8.85E-06
RMNDR	7.57E-07
EFFEC	4.44E-06

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	5.49E-07
INHALATION	3.89E-06
AIR IMMERSION	3.89E-13
GROUND SURFACE	5.59E-09
INTERNAL	4.44E-06
EXTERNAL	5.59E-09
TOTAL	4.45E-06

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	1.89E-06
U-235	9.87E-08
U-236	6.55E-08
U-238	2.22E-06
RA-226	3.56E-10
RA-228	6.34E-10
TH-228	1.22E-07
TH-230	8.65E-09
TH-232	2.76E-08
TH-234	9.84E-09
TOTAL	4.45E-06

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	7.19E-13
BONE	4.72E-13
THYROID	6.17E-15
BREAST	7.07E-14
LUNG	5.27E-11
STOMACH	4.72E-14
BOWEL	1.33E-13
LIVER	4.11E-14
PANCREAS	2.69E-14
URINARY	1.59E-12
OTHER	3.29E-14
TOTAL	5.58E-11

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	2.95E-12
INHALATION	5.28E-11
AIR IMMERSION	8.65E-18
GROUND SURFACE	1.28E-13
INTERNAL	5.57E-11
EXTERNAL	1.28E-13
TOTAL	5.58E-11

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	2.32E-11
U-235	1.27E-12
U-236	8.05E-13
U-238	2.76E-11
RA-226	3.58E-15
RA-228	5.57E-15
TH-228	2.44E-12
TH-230	7.01E-14
TH-232	1.55E-13
TH-234	2.29E-13
TOTAL	5.58E-11

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	940	1277	2087	1792	2376	2453	2418
N	2.1E-06	1.8E-06	1.2E-06	1.4E-06	1.0E-06	1.0E-06	1.0E-06
NNW	9.1E-07	9.0E-07	7.1E-07	7.8E-07	6.4E-07	6.2E-07	6.3E-07
NW	6.1E-07	5.8E-07	4.8E-07	5.1E-07	4.4E-07	4.4E-07	4.4E-07
WNW	7.7E-07	7.0E-07	5.4E-07	5.9E-07	4.9E-07	4.8E-07	4.8E-07
W	1.6E-06	1.4E-06	1.0E-06	1.2E-06	9.4E-07	9.2E-07	9.3E-07
WSW	3.6E-06	3.0E-06	1.9E-06	2.2E-06	1.7E-06	1.6E-06	1.6E-06
SW	2.3E-06	1.9E-06	1.2E-06	1.4E-06	1.1E-06	1.0E-06	1.1E-06
SSW	1.6E-06	1.2E-06	7.9E-07	9.1E-07	6.9E-07	6.7E-07	6.8E-07
S	1.5E-06	1.2E-06	7.6E-07	8.7E-07	6.7E-07	6.5E-07	6.6E-07
SSE	1.5E-06	1.2E-06	7.8E-07	8.9E-07	7.0E-07	6.8E-07	6.9E-07
SE	2.5E-06	2.1E-06	1.4E-06	1.6E-06	1.2E-06	1.2E-06	1.2E-06
ESE	3.2E-06	2.7E-06	1.8E-06	2.0E-06	1.6E-06	1.5E-06	1.5E-06
E	4.4E-06	3.6E-06	2.3E-06	2.7E-06	2.0E-06	2.0E-06	2.0E-06
ENE	4.0E-06	3.3E-06	2.3E-06	2.6E-06	2.0E-06	2.0E-06	2.0E-06
NE	4.3E-06	3.7E-06	2.5E-06	2.9E-06	2.2E-06	2.2E-06	2.2E-06
NNE	3.6E-06	3.1E-06	2.1E-06	2.4E-06	1.8E-06	1.7E-06	1.8E-06

	Distance (m)						
Direction	1383	1597	2132	2191	1456	2512	1545
N	1.7E-06	1.5E-06	1.2E-06	1.1E-06	1.6E-06	9.8E-07	1.6E-06
NNW	8.8E-07	8.3E-07	6.9E-07	6.8E-07	8.6E-07	6.1E-07	8.4E-07
NW	5.6E-07	5.4E-07	4.7E-07	4.6E-07	5.5E-07	4.3E-07	5.4E-07
WNW	6.8E-07	6.3E-07	5.3E-07	5.2E-07	6.6E-07	4.7E-07	6.4E-07
W	1.4E-06	1.3E-06	1.0E-06	1.0E-06	1.3E-06	9.0E-07	1.3E-06
WSW	2.8E-06	2.5E-06	1.9E-06	1.8E-06	2.7E-06	1.6E-06	2.5E-06
SW	1.8E-06	1.6E-06	1.2E-06	1.2E-06	1.7E-06	1.0E-06	1.6E-06
SSW	1.2E-06	1.0E-06	7.7E-07	7.5E-07	1.1E-06	6.6E-07	1.1E-06
S	1.1E-06	9.7E-07	7.4E-07	7.2E-07	1.0E-06	6.4E-07	9.9E-07
SSE	1.1E-06	9.8E-07	7.7E-07	7.5E-07	1.1E-06	6.7E-07	1.0E-06
SE	2.0E-06	1.7E-06	1.4E-06	1.3E-06	1.9E-06	1.2E-06	1.8E-06
ESE	2.5E-06	2.3E-06	1.7E-06	1.7E-06	2.4E-06	1.5E-06	2.3E-06
E	3.3E-06	3.0E-06	2.3E-06	2.2E-06	3.2E-06	1.9E-06	3.0E-06
ENE	3.2E-06	2.9E-06	2.2E-06	2.2E-06	3.1E-06	1.9E-06	2.9E-06
NE	3.5E-06	3.2E-06	2.5E-06	2.4E-06	3.4E-06	2.1E-06	3.3E-06
NNE	3.0E-06	2.6E-06	2.0E-06	2.0E-06	2.8E-06	1.7E-06	2.7E-06

000308

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1776	1871	1830	2121	2150	1485
N	1.4E-06	1.3E-06	1.3E-06	1.2E-06	1.2E-06	1.6E-06
NNW	7.8E-07	7.6E-07	7.7E-07	7.0E-07	6.9E-07	8.6E-07
NW	5.1E-07	5.0E-07	5.1E-07	4.7E-07	4.7E-07	5.5E-07
WNW	5.9E-07	5.7E-07	5.8E-07	5.3E-07	5.2E-07	6.5E-07
W	1.2E-06	1.1E-06	1.2E-06	1.0E-06	1.0E-06	1.3E-06
WSW	2.2E-06	2.1E-06	2.2E-06	1.9E-06	1.9E-06	2.6E-06
SW	1.4E-06	1.4E-06	1.4E-06	1.2E-06	1.2E-06	1.7E-06
SSW	9.2E-07	8.8E-07	9.0E-07	7.8E-07	7.7E-07	1.1E-06
S	8.8E-07	8.4E-07	8.6E-07	7.5E-07	7.4E-07	1.0E-06
SSE	9.0E-07	8.6E-07	8.7E-07	7.7E-07	7.6E-07	1.0E-06
SE	1.6E-06	1.5E-06	1.6E-06	1.4E-06	1.3E-06	1.9E-06
ESE	2.1E-06	2.0E-06	2.0E-06	1.7E-06	1.7E-06	2.4E-06
E	2.7E-06	2.6E-06	2.6E-06	2.3E-06	2.2E-06	3.2E-06
ENE	2.6E-06	2.5E-06	2.6E-06	2.3E-06	2.2E-06	3.0E-06
NE	2.9E-06	2.8E-06	2.9E-06	2.5E-06	2.5E-06	3.4E-06
NNE	2.4E-06	2.3E-06	2.3E-06	2.0E-06	2.0E-06	2.8E-06

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m) 940	1277	2087	1792	2376	2453	2418
N	2.6E-11	2.2E-11	1.5E-11	1.7E-11	1.3E-11	1.2E-11	1.3E-11
NNW	1.1E-11	1.1E-11	8.5E-12	9.4E-12	7.7E-12	7.5E-12	7.6E-12
NW	6.9E-12	6.7E-12	5.5E-12	5.9E-12	5.1E-12	5.0E-12	5.0E-12
WNW	9.0E-12	8.3E-12	6.2E-12	6.9E-12	5.7E-12	5.5E-12	5.6E-12
W	2.0E-11	1.8E-11	1.3E-11	1.4E-11	1.2E-11	1.1E-11	1.1E-11
WSW	4.5E-11	3.8E-11	2.4E-11	2.8E-11	2.1E-11	2.0E-11	2.1E-11
SW	2.9E-11	2.4E-11	1.5E-11	1.8E-11	1.3E-11	1.3E-11	1.3E-11
SSW	2.0E-11	1.6E-11	9.6E-12	1.1E-11	8.4E-12	8.1E-12	8.2E-12
S	1.8E-11	1.4E-11	9.2E-12	1.1E-11	8.1E-12	7.8E-12	7.9E-12
SSE	1.9E-11	1.4E-11	9.3E-12	1.1E-11	8.3E-12	8.0E-12	8.2E-12
SE	3.0E-11	2.6E-11	1.7E-11	2.0E-11	1.5E-11	1.4E-11	1.5E-11
ESE	3.9E-11	3.3E-11	2.2E-11	2.6E-11	1.9E-11	1.9E-11	1.9E-11
E	5.6E-11	4.5E-11	2.9E-11	3.3E-11	2.5E-11	2.4E-11	2.5E-11
ENE	5.0E-11	4.2E-11	2.9E-11	3.3E-11	2.5E-11	2.5E-11	2.5E-11
NE	5.4E-11	4.7E-11	3.2E-11	3.7E-11	2.8E-11	2.7E-11	2.7E-11
NNE	4.6E-11	4.0E-11	2.6E-11	3.0E-11	2.3E-11	2.2E-11	2.2E-11

Direction	Distance (m) 1383	1597	2132	2191	1456	2512	1545
N	2.1E-11	1.9E-11	1.4E-11	1.4E-11	2.0E-11	1.2E-11	2.0E-11
NNW	1.1E-11	1.0E-11	8.4E-12	8.2E-12	1.0E-11	7.3E-12	1.0E-11
NW	6.5E-12	6.2E-12	5.4E-12	5.3E-12	6.4E-12	4.9E-12	6.3E-12
WNW	8.0E-12	7.4E-12	6.2E-12	6.0E-12	7.8E-12	5.4E-12	7.5E-12
W	1.7E-11	1.6E-11	1.3E-11	1.2E-11	1.6E-11	1.1E-11	1.6E-11
WSW	3.5E-11	3.1E-11	2.4E-11	2.3E-11	3.4E-11	2.0E-11	3.2E-11
SW	2.2E-11	2.0E-11	1.5E-11	1.5E-11	2.1E-11	1.3E-11	2.0E-11
SSW	1.4E-11	1.3E-11	9.4E-12	9.1E-12	1.4E-11	7.9E-12	1.3E-11
S	1.3E-11	1.2E-11	9.0E-12	8.8E-12	1.3E-11	7.6E-12	1.2E-11
SSE	1.3E-11	1.2E-11	9.1E-12	8.9E-12	1.3E-11	7.9E-12	1.2E-11
SE	2.4E-11	2.2E-11	1.7E-11	1.6E-11	2.3E-11	1.4E-11	2.2E-11
ESE	3.1E-11	2.8E-11	2.2E-11	2.1E-11	3.0E-11	1.8E-11	2.9E-11
E	4.2E-11	3.7E-11	2.8E-11	2.7E-11	4.0E-11	2.4E-11	3.8E-11
ENE	4.0E-11	3.6E-11	2.8E-11	2.7E-11	3.8E-11	2.4E-11	3.7E-11
NE	4.5E-11	4.0E-11	3.1E-11	3.0E-11	4.3E-11	2.6E-11	4.1E-11
NNE	3.8E-11	3.3E-11	2.5E-11	2.5E-11	3.6E-11	2.1E-11	3.4E-11

000310

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m) 1776	1871	1830	2121	2150	1485
N	1.7E-11	1.6E-11	1.7E-11	1.5E-11	1.4E-11	2.0E-11
NNW	9.5E-12	9.2E-12	9.3E-12	8.4E-12	8.3E-12	1.0E-11
NW	5.9E-12	5.8E-12	5.8E-12	5.4E-12	5.4E-12	6.4E-12
WNW	6.9E-12	6.7E-12	6.8E-12	6.2E-12	6.1E-12	7.7E-12
W	1.4E-11	1.4E-11	1.4E-11	1.3E-11	1.3E-11	1.6E-11
WSW	2.8E-11	2.7E-11	2.8E-11	2.4E-11	2.3E-11	3.3E-11
SW	1.8E-11	1.7E-11	1.7E-11	1.5E-11	1.5E-11	2.1E-11
SSW	1.1E-11	1.1E-11	1.1E-11	9.5E-12	9.3E-12	1.3E-11
S	1.1E-11	1.0E-11	1.0E-11	9.1E-12	8.9E-12	1.3E-11
SSE	1.1E-11	1.0E-11	1.0E-11	9.2E-12	9.1E-12	1.3E-11
SE	2.0E-11	1.9E-11	1.9E-11	1.7E-11	1.6E-11	2.3E-11
ESE	2.6E-11	2.5E-11	2.5E-11	2.2E-11	2.1E-11	3.0E-11
E	3.4E-11	3.2E-11	3.3E-11	2.8E-11	2.8E-11	4.0E-11
ENE	3.3E-11	3.1E-11	3.2E-11	2.8E-11	2.8E-11	3.8E-11
NE	3.7E-11	3.5E-11	3.6E-11	3.1E-11	3.1E-11	4.3E-11
NNE	3.0E-11	2.9E-11	3.0E-11	2.6E-11	2.5E-11	3.6E-11

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Apr 8, 1998 1:30 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

9.19E-06

At This Location: 671 Meters East Northeast

Source Category: REMEDIATION SITE
Source Type: Area
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
AWWT (Tank emissions) [G1]

Dataset Name: 97-AWWT-G1
Dataset Date: Apr 8, 1998 1:21 pm
Wind File: WNDFILES\97STAR.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 671 Meters East Northeast
Lifetime Fatal Cancer Risk: 1.20E-10

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	2.75E-08
BREAST	3.14E-08
R MAR	6.75E-07
LUNGS	7.16E-05
THYROID	2.68E-08
ENDOST	9.34E-06
RMNDR	7.52E-07
EFFEC	9.19E-06

RADIONUCLIDE EMISSIONS DURING THE YEAR 1997

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	1.00	1.3E-08	1.3E-08
U-235	Y	1.00	6.8E-10	6.8E-10
U-236	Y	1.00	4.6E-10	4.6E-10
U-238	Y	1.00	1.7E-08	1.7E-08
RA-226	W	1.00	1.1E-11	1.1E-11
RA-228	W	1.00	4.5E-11	4.5E-11
TH-228	Y	1.00	4.8E-10	4.8E-10
TH-230	Y	1.00	3.4E-11	3.4E-11
TH-232	Y	1.00	7.5E-11	7.5E-11
TH-234	Y	1.00	7.0E-08	7.0E-08

SITE INFORMATION

Temperature: 11 degrees C
Precipitation: 102 cm/y
Mixing Height: 950 m

SOURCE INFORMATION

Source Number: 1

Source Height (m): 10.00
Area (sq m): 1.50E+03

Plume Rise Pasquill Cat:	A	B	C	D	E	F	G
Fixed (m): (Fixed Rise)	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

1510	1441	1991	1529	1185	671	742	826	864	1030
1035	1103	1105	1127	1804	1434	1399	1412	2062	2018

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Apr 8, 1998 1:30 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Area
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
AWWT (Tank emissions) [G1]

Dataset Name: 97-AWWT-G1
Dataset Date: Apr 8, 1998 1:21 pm
Wind File: WNDFILES\97STAR.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	2.75E-08
BREAST	3.14E-08
R MAR	6.75E-07
LUNGS	7.16E-05
THYROID	2.68E-08
ENDOST	9.34E-06
RMNDR	7.52E-07
EFFEC	9.19E-06

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	5.32E-07
INHALATION	8.66E-06
AIR IMMERSION	8.64E-13
GROUND SURFACE	5.49E-09
INTERNAL	9.19E-06
EXTERNAL	5.49E-09
TOTAL	9.20E-06

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	3.90E-06
U-235	1.99E-07
U-236	1.35E-07
U-238	4.60E-06
RA-226	4.70E-10
RA-228	7.53E-10
TH-228	2.70E-07
TH-230	1.89E-08
TH-232	6.06E-08
TH-234	1.27E-08
TOTAL	9.20E-06

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	7.58E-13
BONE	4.96E-13
THYROID	6.19E-15
BREAST	7.06E-14
LUNG	1.17E-10
STOMACH	4.83E-14
BOWEL	1.41E-13
LIVER	4.45E-14
PANCREAS	2.72E-14
URINARY	1.56E-12
OTHER	3.33E-14
TOTAL	1.20E-10

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	2.86E-12
INHALATION	1.17E-10
AIR IMMERSION	1.92E-17
GROUND SURFACE	1.26E-13
INTERNAL	1.20E-10
EXTERNAL	1.26E-13
TOTAL	1.20E-10

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	5.01E-11
U-235	2.61E-12
U-236	1.74E-12
U-238	5.96E-11
RA-226	6.26E-15
RA-228	7.71E-15
TH-228	5.41E-12
TH-230	1.55E-13
TH-232	3.41E-13
TH-234	4.03E-13
TOTAL	1.20E-10

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

Direction	Distance (m) 1510	1441	1991	1529	1185	671	742
N	1.4E-06	1.5E-06	1.0E-06	1.4E-06	1.9E-06	3.5E-06	3.1E-06
NNW	9.6E-07	1.0E-06	6.9E-07	9.4E-07	1.3E-06	2.4E-06	2.1E-06
NW	9.8E-07	1.0E-06	7.0E-07	9.6E-07	1.3E-06	2.4E-06	2.1E-06
WNW	1.0E-06	1.1E-06	7.6E-07	1.0E-06	1.3E-06	2.4E-06	2.1E-06
W	1.6E-06	1.7E-06	1.2E-06	1.6E-06	2.1E-06	3.8E-06	3.4E-06
WSW	1.7E-06	1.8E-06	1.2E-06	1.6E-06	2.3E-06	5.0E-06	4.3E-06
SW	9.6E-07	1.0E-06	6.8E-07	9.4E-07	1.3E-06	2.7E-06	2.4E-06
SSW	8.2E-07	8.6E-07	5.9E-07	8.1E-07	1.1E-06	2.1E-06	1.8E-06
S	9.8E-07	1.0E-06	7.2E-07	9.7E-07	1.3E-06	2.3E-06	2.0E-06
SSE	1.8E-06	1.9E-06	1.4E-06	1.8E-06	2.3E-06	3.5E-06	3.2E-06
SE	2.9E-06	3.0E-06	2.2E-06	2.9E-06	3.5E-06	5.0E-06	4.6E-06
ESE	3.1E-06	3.2E-06	2.4E-06	3.1E-06	3.7E-06	5.6E-06	5.1E-06
E	3.8E-06	4.0E-06	2.8E-06	3.7E-06	4.8E-06	8.1E-06	7.3E-06
ENE	3.8E-06	4.0E-06	2.7E-06	3.8E-06	5.0E-06	9.2E-06	8.2E-06
NE	3.3E-06	3.5E-06	2.4E-06	3.3E-06	4.4E-06	8.2E-06	7.3E-06
NNE	2.1E-06	2.2E-06	1.5E-06	2.0E-06	2.8E-06	5.4E-06	4.8E-06

Direction	Distance (m) 826	864	1030	1035	1103	1105	1127
N	2.8E-06	2.6E-06	2.2E-06	2.2E-06	2.0E-06	2.0E-06	2.0E-06
NNW	1.9E-06	1.8E-06	1.5E-06	1.5E-06	1.4E-06	1.4E-06	1.3E-06
NW	1.9E-06	1.8E-06	1.5E-06	1.5E-06	1.4E-06	1.4E-06	1.3E-06
WNW	1.9E-06	1.8E-06	1.5E-06	1.5E-06	1.4E-06	1.4E-06	1.4E-06
W	3.0E-06	2.9E-06	2.4E-06	2.4E-06	2.2E-06	2.2E-06	2.2E-06
WSW	3.7E-06	3.5E-06	2.8E-06	2.7E-06	2.5E-06	2.5E-06	2.5E-06
SW	2.0E-06	1.9E-06	1.5E-06	1.5E-06	1.4E-06	1.4E-06	1.4E-06
SSW	1.6E-06	1.5E-06	1.3E-06	1.2E-06	1.2E-06	1.2E-06	1.1E-06
S	1.8E-06	1.7E-06	1.4E-06	1.4E-06	1.3E-06	1.3E-06	1.3E-06
SSE	3.0E-06	2.9E-06	2.5E-06	2.5E-06	2.4E-06	2.4E-06	2.3E-06
SE	4.3E-06	4.2E-06	3.8E-06	3.8E-06	3.6E-06	3.6E-06	3.6E-06
ESE	4.7E-06	4.6E-06	4.1E-06	4.1E-06	3.9E-06	3.9E-06	3.9E-06
E	6.6E-06	6.3E-06	5.4E-06	5.4E-06	5.1E-06	5.1E-06	5.0E-06
ENE	7.3E-06	6.9E-06	5.8E-06	5.7E-06	5.4E-06	5.4E-06	5.2E-06
NE	6.5E-06	6.2E-06	5.1E-06	5.0E-06	4.7E-06	4.7E-06	4.6E-06
NNE	4.2E-06	4.0E-06	3.2E-06	3.2E-06	3.0E-06	3.0E-06	2.9E-06

000321

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1804	1434	1399	1412	2062	2018
N	1.2E-06	1.5E-06	1.6E-06	1.5E-06	9.9E-07	1.0E-06
NNW	7.8E-07	1.0E-06	1.0E-06	1.0E-06	6.6E-07	6.8E-07
NW	7.9E-07	1.0E-06	1.1E-06	1.1E-06	6.8E-07	6.9E-07
WNW	8.6E-07	1.1E-06	1.1E-06	1.1E-06	7.3E-07	7.5E-07
W	1.3E-06	1.7E-06	1.8E-06	1.7E-06	1.1E-06	1.2E-06
WSW	1.3E-06	1.8E-06	1.9E-06	1.8E-06	1.1E-06	1.1E-06
SW	7.7E-07	1.0E-06	1.1E-06	1.0E-06	6.5E-07	6.7E-07
SSW	6.7E-07	8.7E-07	8.9E-07	8.8E-07	5.7E-07	5.8E-07
S	8.1E-07	1.0E-06	1.1E-06	1.0E-06	6.9E-07	7.1E-07
SSE	1.5E-06	1.9E-06	2.0E-06	2.0E-06	1.3E-06	1.4E-06
SE	2.5E-06	3.0E-06	3.1E-06	3.1E-06	2.1E-06	2.2E-06
ESE	2.6E-06	3.2E-06	3.3E-06	3.3E-06	2.3E-06	2.3E-06
E	3.1E-06	4.0E-06	4.1E-06	4.0E-06	2.7E-06	2.7E-06
ENE	3.1E-06	4.0E-06	4.1E-06	4.1E-06	2.6E-06	2.7E-06
NE	2.7E-06	3.5E-06	3.6E-06	3.6E-06	2.3E-06	2.3E-06
NNE	1.7E-06	2.2E-06	2.3E-06	2.2E-06	1.4E-06	1.4E-06

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m) 1510	1441	1991	1529	1185	671	742
N	1.8E-11	1.9E-11	1.3E-11	1.8E-11	2.4E-11	4.5E-11	4.0E-11
NNW	1.2E-11	1.3E-11	8.6E-12	1.2E-11	1.6E-11	3.1E-11	2.7E-11
NW	1.2E-11	1.3E-11	8.8E-12	1.2E-11	1.6E-11	3.1E-11	2.8E-11
WNW	1.3E-11	1.4E-11	9.6E-12	1.3E-11	1.7E-11	3.0E-11	2.7E-11
W	2.1E-11	2.2E-11	1.5E-11	2.1E-11	2.7E-11	4.9E-11	4.4E-11
WSW	2.1E-11	2.3E-11	1.5E-11	2.1E-11	3.0E-11	6.5E-11	5.6E-11
SW	1.2E-11	1.3E-11	8.4E-12	1.2E-11	1.6E-11	3.5E-11	3.1E-11
SSW	1.0E-11	1.1E-11	7.3E-12	1.0E-11	1.4E-11	2.7E-11	2.4E-11
S	1.2E-11	1.3E-11	9.0E-12	1.2E-11	1.6E-11	3.0E-11	2.6E-11
SSE	2.4E-11	2.5E-11	1.8E-11	2.3E-11	2.9E-11	4.6E-11	4.2E-11
SE	3.8E-11	3.9E-11	2.9E-11	3.7E-11	4.5E-11	6.5E-11	6.0E-11
ESE	4.0E-11	4.2E-11	3.1E-11	4.0E-11	4.9E-11	7.3E-11	6.6E-11
E	4.9E-11	5.2E-11	3.6E-11	4.9E-11	6.2E-11	1.1E-10	9.5E-11
ENE	5.0E-11	5.2E-11	3.5E-11	4.9E-11	6.5E-11	1.2E-10	1.1E-10
NE	4.3E-11	4.6E-11	3.1E-11	4.2E-11	5.7E-11	1.1E-10	9.6E-11
NNE	2.7E-11	2.8E-11	1.9E-11	2.6E-11	3.6E-11	7.1E-11	6.2E-11

Direction	Distance (m) 826	864	1030	1035	1103	1105	1127
N	3.6E-11	3.4E-11	2.8E-11	2.8E-11	2.6E-11	2.6E-11	2.5E-11
NNW	2.4E-11	2.3E-11	1.9E-11	1.9E-11	1.7E-11	1.7E-11	1.7E-11
NW	2.4E-11	2.3E-11	1.9E-11	1.9E-11	1.8E-11	1.8E-11	1.7E-11
WNW	2.4E-11	2.3E-11	1.9E-11	1.9E-11	1.8E-11	1.8E-11	1.8E-11
W	3.9E-11	3.7E-11	3.1E-11	3.1E-11	2.9E-11	2.9E-11	2.8E-11
WSW	4.8E-11	4.6E-11	3.6E-11	3.5E-11	3.3E-11	3.3E-11	3.2E-11
SW	2.6E-11	2.5E-11	2.0E-11	1.9E-11	1.8E-11	1.8E-11	1.8E-11
SSW	2.1E-11	2.0E-11	1.6E-11	1.6E-11	1.5E-11	1.5E-11	1.4E-11
S	2.3E-11	2.2E-11	1.8E-11	1.8E-11	1.7E-11	1.7E-11	1.7E-11
SSE	3.8E-11	3.7E-11	3.3E-11	3.2E-11	3.1E-11	3.1E-11	3.0E-11
SE	5.6E-11	5.5E-11	5.0E-11	4.9E-11	4.7E-11	4.7E-11	4.7E-11
ESE	6.1E-11	6.0E-11	5.4E-11	5.3E-11	5.1E-11	5.1E-11	5.0E-11
E	8.6E-11	8.2E-11	7.1E-11	7.0E-11	6.6E-11	6.6E-11	6.5E-11
ENE	9.5E-11	9.1E-11	7.5E-11	7.5E-11	7.0E-11	7.0E-11	6.8E-11
NE	8.5E-11	8.0E-11	6.6E-11	6.6E-11	6.1E-11	6.1E-11	6.0E-11
NNE	5.5E-11	5.2E-11	4.2E-11	4.2E-11	3.9E-11	3.9E-11	3.8E-11

000323

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1804	1434	1399	1412	2062	2018
N	1.5E-11	2.0E-11	2.0E-11	2.0E-11	1.3E-11	1.3E-11
NNW	9.8E-12	1.3E-11	1.3E-11	1.3E-11	8.2E-12	8.5E-12
NW	1.0E-11	1.3E-11	1.4E-11	1.3E-11	8.4E-12	8.6E-12
WNW	1.1E-11	1.4E-11	1.4E-11	1.4E-11	9.2E-12	9.4E-12
W	1.7E-11	2.2E-11	2.3E-11	2.2E-11	1.4E-11	1.5E-11
WSW	1.7E-11	2.3E-11	2.4E-11	2.4E-11	1.4E-11	1.4E-11
SW	9.6E-12	1.3E-11	1.3E-11	1.3E-11	8.0E-12	8.3E-12
SSW	8.3E-12	1.1E-11	1.1E-11	1.1E-11	7.0E-12	7.2E-12
S	1.0E-11	1.3E-11	1.3E-11	1.3E-11	8.6E-12	8.8E-12
SSE	2.0E-11	2.5E-11	2.5E-11	2.5E-11	1.7E-11	1.8E-11
SE	3.2E-11	3.9E-11	4.0E-11	4.0E-11	2.8E-11	2.8E-11
ESE	3.4E-11	4.2E-11	4.3E-11	4.3E-11	2.9E-11	3.0E-11
E	4.1E-11	5.2E-11	5.3E-11	5.3E-11	3.5E-11	3.6E-11
ENE	4.0E-11	5.3E-11	5.4E-11	5.3E-11	3.4E-11	3.5E-11
NE	3.5E-11	4.6E-11	4.7E-11	4.7E-11	2.9E-11	3.0E-11
NNE	2.1E-11	2.9E-11	2.9E-11	2.9E-11	1.8E-11	1.9E-11

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Apr 8, 1998 1:31 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

3.78E-06

At This Location: 1511 Meters East Northeast

Source Category: REMEDIATION SITE
Source Type: Area
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
AWWT (Tank emissions) [G2]

Dataset Name: 97-AWWT-G2
Dataset Date: Apr 8, 1998 1:23 pm
Wind File: WNDFILES\97STAR.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 1511 Meters East Northeast
Lifetime Fatal Cancer Risk: 4.93E-11

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	1.17E-08
BREAST	1.33E-08
R MAR	2.89E-07
LUNGS	2.93E-05
THYROID	1.14E-08
ENDOST	4.00E-06
RMNDR	3.23E-07
EFFEC	3.78E-06

RADIONUCLIDE EMISSIONS DURING THE YEAR 1997

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	1.00	1.3E-08	1.3E-08
U-235	Y	1.00	6.8E-10	6.8E-10
U-236	Y	1.00	4.6E-10	4.6E-10
U-238	Y	1.00	1.7E-08	1.7E-08
RA-226	W	1.00	1.1E-11	1.1E-11
RA-228	W	1.00	4.5E-11	4.5E-11
TH-228	Y	1.00	4.8E-10	4.8E-10
TH-230	Y	1.00	3.4E-11	3.4E-11
TH-232	Y	1.00	7.5E-11	7.5E-11
TH-234	Y	1.00	7.0E-08	7.0E-08

SITE INFORMATION

Temperature:	11 degrees C
Precipitation:	102 cm/y
Mixing Height:	950 m

SOURCE INFORMATION

Source Number: 1

Source Height (m): 10.00
Area (sq m): 1.50E+03

Plume Rise Pasquill Cat:	A	B	C	D	E	F	G
Fixed (m): (Fixed Rise)	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

1558	1735	1828	2156	2876	2011	2362	1812	1546	2599
2668	1873	2071	1572	1967	2053	2001	1511	1542	2127

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Apr 8, 1998 1:31 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Area
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
AWWT (Tank emissions) [G2]

Dataset Name: 97-AWWT-G2
Dataset Date: Apr 8, 1998 1:23 pm
Wind File: WNDFILES\97STAR.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	1.17E-08
BREAST	1.33E-08
R MAR	2.89E-07
LUNGS	2.93E-05
THYROID	1.14E-08
ENDOST	4.00E-06
RMNDR	3.23E-07
EFFEC	3.78E-06

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	2.30E-07
INHALATION	3.54E-06
AIR IMMERSION	3.54E-13
GROUND SURFACE	2.26E-09
INTERNAL	3.77E-06
EXTERNAL	2.26E-09
TOTAL	3.78E-06

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	1.60E-06
U-235	8.15E-08
U-236	5.56E-08
U-238	1.89E-06
RA-226	1.98E-10
RA-228	3.19E-10
TH-228	1.10E-07
TH-230	7.72E-09
TH-232	2.48E-08
TH-234	5.33E-09
TOTAL	3.78E-06

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	3.24E-13
BONE	2.13E-13
THYROID	2.61E-15
BREAST	2.96E-14
LUNG	4.80E-11
STOMACH	2.05E-14
BOWEL	6.02E-14
LIVER	1.88E-14
PANCREAS	1.16E-14
URINARY	6.74E-13
OTHER	1.41E-14
TOTAL	4.93E-11

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	1.23E-12
INHALATION	4.81E-11
AIR IMMERSION	7.87E-18
GROUND SURFACE	5.19E-14
INTERNAL	4.93E-11
EXTERNAL	5.19E-14
TOTAL	4.93E-11

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	2.05E-11
U-235	1.07E-12
U-236	7.13E-13
U-238	2.44E-11
RA-226	2.59E-15
RA-228	3.24E-15
TH-228	2.21E-12
TH-230	6.33E-14
TH-232	1.40E-13
TH-234	1.67E-13
TOTAL	4.93E-11

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	1558	1735	1828	2156	2876	2011	2362
N	1.4E-06	1.2E-06	1.1E-06	9.1E-07	6.2E-07	1.0E-06	8.1E-07
NNW	9.0E-07	7.9E-07	7.4E-07	6.0E-07	4.1E-07	6.6E-07	5.4E-07
NW	9.2E-07	8.1E-07	7.6E-07	6.1E-07	4.2E-07	6.7E-07	5.5E-07
WNW	9.8E-07	8.7E-07	8.2E-07	6.7E-07	4.6E-07	7.3E-07	6.0E-07
W	1.5E-06	1.4E-06	1.3E-06	1.1E-06	7.2E-07	1.1E-06	9.4E-07
WSW	1.6E-06	1.4E-06	1.3E-06	1.0E-06	6.6E-07	1.1E-06	8.9E-07
SW	9.0E-07	7.8E-07	7.3E-07	5.9E-07	4.0E-07	6.4E-07	5.2E-07
SSW	7.7E-07	6.7E-07	6.3E-07	5.1E-07	3.5E-07	5.6E-07	4.6E-07
S	9.2E-07	8.2E-07	7.7E-07	6.3E-07	4.3E-07	6.9E-07	5.6E-07
SSE	1.8E-06	1.6E-06	1.5E-06	1.2E-06	8.7E-07	1.4E-06	1.1E-06
SE	2.8E-06	2.5E-06	2.4E-06	2.0E-06	1.4E-06	2.2E-06	1.8E-06
ESE	3.0E-06	2.7E-06	2.6E-06	2.1E-06	1.5E-06	2.3E-06	1.9E-06
E	3.6E-06	3.2E-06	3.1E-06	2.5E-06	1.7E-06	2.7E-06	2.2E-06
ENE	3.6E-06	3.2E-06	3.0E-06	2.4E-06	1.6E-06	2.7E-06	2.2E-06
NE	3.2E-06	2.8E-06	2.6E-06	2.1E-06	1.4E-06	2.3E-06	1.9E-06
NNE	2.0E-06	1.7E-06	1.6E-06	1.3E-06	8.7E-07	1.4E-06	1.2E-06

	Distance (m)						
Direction	1812	1546	2599	2668	1873	2071	1572
N	1.1E-06	1.4E-06	7.1E-07	6.9E-07	1.1E-06	9.6E-07	1.3E-06
NNW	7.5E-07	9.1E-07	4.7E-07	4.6E-07	7.2E-07	6.3E-07	8.9E-07
NW	7.7E-07	9.3E-07	4.8E-07	4.6E-07	7.3E-07	6.5E-07	9.1E-07
WNW	8.3E-07	9.9E-07	5.3E-07	5.1E-07	8.0E-07	7.0E-07	9.7E-07
W	1.3E-06	1.6E-06	8.3E-07	8.0E-07	1.3E-06	1.1E-06	1.5E-06
WSW	1.3E-06	1.6E-06	7.7E-07	7.4E-07	1.2E-06	1.1E-06	1.6E-06
SW	7.4E-07	9.1E-07	4.6E-07	4.4E-07	7.1E-07	6.2E-07	8.9E-07
SSW	6.4E-07	7.7E-07	4.0E-07	3.9E-07	6.1E-07	5.4E-07	7.6E-07
S	7.8E-07	9.3E-07	5.0E-07	4.8E-07	7.5E-07	6.6E-07	9.1E-07
SSE	1.5E-06	1.8E-06	9.9E-07	9.6E-07	1.5E-06	1.3E-06	1.8E-06
SE	2.4E-06	2.8E-06	1.6E-06	1.6E-06	2.3E-06	2.1E-06	2.8E-06
ESE	2.6E-06	3.0E-06	1.7E-06	1.7E-06	2.5E-06	2.2E-06	3.0E-06
E	3.1E-06	3.7E-06	2.0E-06	1.9E-06	3.0E-06	2.6E-06	3.6E-06
ENE	3.0E-06	3.7E-06	1.9E-06	1.8E-06	2.9E-06	2.6E-06	3.6E-06
NE	2.6E-06	3.2E-06	1.6E-06	1.6E-06	2.5E-06	2.2E-06	3.1E-06
NNE	1.6E-06	2.0E-06	1.0E-06	9.7E-07	1.6E-06	1.4E-06	2.0E-06

000334

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1967	2053	2001	1511	1542	2127
N	1.0E-06	9.7E-07	1.0E-06	1.4E-06	1.4E-06	9.3E-07
NNW	6.8E-07	6.4E-07	6.6E-07	9.3E-07	9.1E-07	6.1E-07
NW	6.9E-07	6.5E-07	6.8E-07	9.5E-07	9.3E-07	6.3E-07
WNW	7.5E-07	7.1E-07	7.3E-07	1.0E-06	9.9E-07	6.8E-07
W	1.2E-06	1.1E-06	1.2E-06	1.6E-06	1.6E-06	1.1E-06
WSW	1.1E-06	1.1E-06	1.1E-06	1.6E-06	1.6E-06	1.0E-06
SW	6.6E-07	6.3E-07	6.5E-07	9.3E-07	9.1E-07	6.0E-07
SSW	5.8E-07	5.5E-07	5.7E-07	7.9E-07	7.8E-07	5.2E-07
S	7.0E-07	6.7E-07	6.9E-07	9.5E-07	9.3E-07	6.4E-07
SSE	1.4E-06	1.3E-06	1.4E-06	1.8E-06	1.8E-06	1.3E-06
SE	2.2E-06	2.1E-06	2.2E-06	2.9E-06	2.8E-06	2.0E-06
ESE	2.4E-06	2.3E-06	2.3E-06	3.1E-06	3.0E-06	2.2E-06
E	2.8E-06	2.7E-06	2.7E-06	3.8E-06	3.7E-06	2.5E-06
ENE	2.7E-06	2.6E-06	2.7E-06	3.8E-06	3.7E-06	2.5E-06
NE	2.4E-06	2.2E-06	2.3E-06	3.3E-06	3.2E-06	2.1E-06
NNE	1.5E-06	1.4E-06	1.4E-06	2.1E-06	2.0E-06	1.3E-06

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m) 1558	1735	1828	2156	2876	2011	2362
N	1.8E-11	1.5E-11	1.5E-11	1.2E-11	7.9E-12	1.3E-11	1.0E-11
NNW	1.2E-11	1.0E-11	9.5E-12	7.6E-12	5.1E-12	8.4E-12	6.8E-12
NW	1.2E-11	1.0E-11	9.7E-12	7.8E-12	5.2E-12	8.5E-12	6.9E-12
WNW	1.3E-11	1.1E-11	1.0E-11	8.5E-12	5.8E-12	9.3E-12	7.6E-12
W	2.0E-11	1.8E-11	1.7E-11	1.4E-11	9.1E-12	1.5E-11	1.2E-11
WSW	2.0E-11	1.8E-11	1.6E-11	1.3E-11	8.4E-12	1.4E-11	1.1E-11
SW	1.1E-11	1.0E-11	9.3E-12	7.4E-12	4.9E-12	8.2E-12	6.5E-12
SSW	9.8E-12	8.6E-12	8.0E-12	6.5E-12	4.3E-12	7.1E-12	5.7E-12
S	1.2E-11	1.0E-11	9.8E-12	8.0E-12	5.4E-12	8.7E-12	7.1E-12
SSE	2.3E-11	2.1E-11	1.9E-11	1.6E-11	1.1E-11	1.7E-11	1.4E-11
SE	3.7E-11	3.3E-11	3.1E-11	2.6E-11	1.8E-11	2.8E-11	2.4E-11
ESE	3.9E-11	3.5E-11	3.3E-11	2.8E-11	1.9E-11	3.0E-11	2.5E-11
E	4.8E-11	4.2E-11	4.0E-11	3.3E-11	2.2E-11	3.6E-11	2.9E-11
ENE	4.8E-11	4.2E-11	3.9E-11	3.2E-11	2.1E-11	3.5E-11	2.8E-11
NE	4.1E-11	3.6E-11	3.4E-11	2.7E-11	1.8E-11	3.0E-11	2.4E-11
NNE	2.6E-11	2.2E-11	2.1E-11	1.7E-11	1.1E-11	1.8E-11	1.5E-11

Direction	Distance (m) 1812	1546	2599	2668	1873	2071	1572
N	1.5E-11	1.8E-11	9.1E-12	8.8E-12	1.4E-11	1.2E-11	1.7E-11
NNW	9.6E-12	1.2E-11	5.9E-12	5.7E-12	9.2E-12	8.1E-12	1.1E-11
NW	9.8E-12	1.2E-11	6.0E-12	5.8E-12	9.4E-12	8.2E-12	1.2E-11
WNW	1.1E-11	1.3E-11	6.7E-12	6.4E-12	1.0E-11	9.0E-12	1.2E-11
W	1.7E-11	2.0E-11	1.1E-11	1.0E-11	1.6E-11	1.4E-11	2.0E-11
WSW	1.7E-11	2.1E-11	9.8E-12	9.5E-12	1.6E-11	1.4E-11	2.0E-11
SW	9.4E-12	1.2E-11	5.7E-12	5.5E-12	9.0E-12	7.8E-12	1.1E-11
SSW	8.1E-12	9.9E-12	5.0E-12	4.8E-12	7.8E-12	6.8E-12	9.7E-12
S	9.9E-12	1.2E-11	6.2E-12	6.0E-12	9.5E-12	8.4E-12	1.2E-11
SSE	2.0E-11	2.3E-11	1.3E-11	1.2E-11	1.9E-11	1.7E-11	2.3E-11
SE	3.2E-11	3.7E-11	2.1E-11	2.0E-11	3.1E-11	2.7E-11	3.6E-11
ESE	3.4E-11	3.9E-11	2.2E-11	2.1E-11	3.3E-11	2.9E-11	3.9E-11
E	4.0E-11	4.8E-11	2.6E-11	2.5E-11	3.9E-11	3.4E-11	4.7E-11
ENE	4.0E-11	4.8E-11	2.4E-11	2.4E-11	3.8E-11	3.3E-11	4.7E-11
NE	3.4E-11	4.2E-11	2.1E-11	2.0E-11	3.3E-11	2.9E-11	4.1E-11
NNE	2.1E-11	2.6E-11	1.3E-11	1.2E-11	2.0E-11	1.8E-11	2.5E-11

000336

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1967	2053	2001	1511	1542	2127
N	1.3E-11	1.2E-11	1.3E-11	1.8E-11	1.8E-11	1.2E-11
NNW	8.6E-12	8.1E-12	8.4E-12	1.2E-11	1.2E-11	7.8E-12
NW	8.8E-12	8.3E-12	8.6E-12	1.2E-11	1.2E-11	7.9E-12
WNW	9.6E-12	9.1E-12	9.4E-12	1.3E-11	1.3E-11	8.7E-12
W	1.5E-11	1.4E-11	1.5E-11	2.1E-11	2.0E-11	1.4E-11
WSW	1.5E-11	1.4E-11	1.4E-11	2.1E-11	2.1E-11	1.3E-11
SW	8.4E-12	7.9E-12	8.2E-12	1.2E-11	1.2E-11	7.6E-12
SSW	7.3E-12	6.9E-12	7.1E-12	1.0E-11	9.9E-12	6.6E-12
S	9.0E-12	8.5E-12	8.8E-12	1.2E-11	1.2E-11	8.1E-12
SSE	1.8E-11	1.7E-11	1.8E-11	2.4E-11	2.3E-11	1.6E-11
SE	2.9E-11	2.8E-11	2.8E-11	3.8E-11	3.7E-11	2.7E-11
ESE	3.1E-11	3.0E-11	3.0E-11	4.0E-11	3.9E-11	2.8E-11
E	3.7E-11	3.5E-11	3.6E-11	4.9E-11	4.8E-11	3.3E-11
ENE	3.6E-11	3.4E-11	3.5E-11	4.9E-11	4.8E-11	3.2E-11
NE	3.1E-11	2.9E-11	3.0E-11	4.3E-11	4.2E-11	2.8E-11
NNE	1.9E-11	1.8E-11	1.9E-11	2.7E-11	2.6E-11	1.7E-11

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Apr 7, 1998 3:55 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

6.13E-06

At This Location: 939 Meters East Northeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Building 53 Bio-Assay & Low-Level Lab Hoods [G1]

Dataset Name: 97-Z006-G1
Dataset Date: Apr 7, 1998 12:35 am
Wind File: WNDFILES\97STAR.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 939 Meters East Northeast
Lifetime Fatal Cancer Risk: 7.79E-11

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	1.97E-08
BREAST	2.24E-08
R MAR	8.55E-07
LUNGS	4.61E-05
THYROID	1.92E-08
ENDOST	1.13E-05
RMNDR	5.10E-07
EFFEC	6.13E-06

Apr 7, 1998 3:55 pm

RADIONUCLIDE EMISSIONS DURING THE YEAR 1997

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	1.00	1.6E-08	1.6E-08
U-235	Y	1.00	8.7E-10	8.7E-10
U-236	Y	1.00	6.4E-10	6.4E-10
U-238	Y	1.00	1.8E-08	1.8E-08
RA-226	W	1.00	1.2E-11	1.2E-11
RA-228	W	1.00	4.7E-11	4.7E-11
TH-228	Y	1.00	4.9E-10	4.9E-10
TH-230	Y	1.00	1.5E-09	1.5E-09
TH-232	Y	1.00	7.8E-11	7.8E-11
TH-234	Y	1.00	7.3E-08	7.3E-08

SITE INFORMATION

Temperature: 11 degrees C
Precipitation: 102 cm/y
Mixing Height: 950 m

SOURCE INFORMATION

Source Number:	1
Stack Height (m):	11.89
Diameter (m):	0.28
Plume Rise Momentum (m/s): (Exit Velocity)	4.62E+00

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

1368	1351	2156	1815	1523	1161	1163	1185	1212	1312
1296	1244	1101	1083	1646	1143	939	940	1627	1681

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Apr 7, 1998 3:55 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Building 53 Bio-Assay & Low-Level Lab Hoods [G1]

Dataset Name: 97-Z006-G1
Dataset Date: Apr 7, 1998 12:35 am
Wind File: WNDFILES\97STAR.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	1.97E-08
BREAST	2.24E-08
R MAR	8.55E-07
LUNGS	4.61E-05
THYROID	1.92E-08
ENDOST	1.13E-05
RMNDR	5.10E-07
EFFEC	6.13E-06

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	3.68E-07
INHALATION	5.76E-06
AIR IMMERSION	4.84E-13
GROUND SURFACE	3.87E-09
INTERNAL	6.13E-06
EXTERNAL	3.87E-09
TOTAL	6.14E-06

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	2.66E-06
U-235	1.34E-07
U-236	9.78E-08
U-238	2.64E-06
RA-226	2.66E-10
RA-228	4.31E-10
TH-228	1.45E-07
TH-230	4.25E-07
TH-232	3.26E-08
TH-234	7.16E-09
TOTAL	6.14E-06

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	8.42E-13
BONE	5.57E-13
THYROID	4.41E-15
BREAST	4.98E-14
LUNG	7.52E-11
STOMACH	3.33E-14
BOWEL	8.80E-14
LIVER	3.98E-14
PANCREAS	1.93E-14
URINARY	1.06E-12
OTHER	2.37E-14
TOTAL	7.79E-11

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	1.95E-12
INHALATION	7.58E-11
AIR IMMERSION	1.08E-17
GROUND SURFACE	8.90E-14
INTERNAL	7.78E-11
EXTERNAL	8.90E-14
TOTAL	7.79E-11

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	3.40E-11
U-235	1.75E-12
U-236	1.25E-12
U-238	3.41E-11
RA-226	3.44E-15
RA-228	4.33E-15
TH-228	2.90E-12
TH-230	3.48E-12
TH-232	1.84E-13
TH-234	2.21E-13
TOTAL	7.79E-11

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	1368	1351	2156	1815	1523	1161	1163
N	1.5E-06	1.5E-06	9.2E-07	1.1E-06	1.3E-06	1.8E-06	1.8E-06
NNW	1.0E-06	1.0E-06	6.2E-07	7.5E-07	9.1E-07	1.2E-06	1.2E-06
NW	1.0E-06	1.0E-06	6.3E-07	7.6E-07	9.2E-07	1.2E-06	1.2E-06
WNW	1.0E-06	1.0E-06	6.5E-07	7.7E-07	9.1E-07	1.2E-06	1.2E-06
W	1.6E-06	1.7E-06	1.0E-06	1.2E-06	1.5E-06	2.0E-06	2.0E-06
WSW	2.1E-06	2.1E-06	1.1E-06	1.4E-06	1.8E-06	2.6E-06	2.6E-06
SW	1.1E-06	1.2E-06	6.5E-07	8.0E-07	9.9E-07	1.4E-06	1.4E-06
SSW	9.0E-07	9.2E-07	5.4E-07	6.6E-07	8.0E-07	1.1E-06	1.1E-06
S	9.9E-07	1.0E-06	6.3E-07	7.4E-07	8.9E-07	1.2E-06	1.2E-06
SSE	1.6E-06	1.6E-06	1.1E-06	1.3E-06	1.5E-06	1.9E-06	1.9E-06
SE	2.3E-06	2.4E-06	1.7E-06	1.9E-06	2.2E-06	2.7E-06	2.7E-06
ESE	2.5E-06	2.6E-06	1.8E-06	2.1E-06	2.3E-06	2.9E-06	2.9E-06
E	3.6E-06	3.6E-06	2.3E-06	2.7E-06	3.2E-06	4.2E-06	4.2E-06
ENE	4.0E-06	4.0E-06	2.4E-06	2.9E-06	3.5E-06	4.8E-06	4.8E-06
NE	3.5E-06	3.6E-06	2.1E-06	2.6E-06	3.1E-06	4.3E-06	4.3E-06
NNE	2.3E-06	2.3E-06	1.4E-06	1.7E-06	2.0E-06	2.8E-06	2.8E-06

	Distance (m)						
Direction	1185	1212	1312	1296	1244	1101	1083
N	1.8E-06	1.7E-06	1.6E-06	1.6E-06	1.7E-06	1.9E-06	2.0E-06
NNW	1.2E-06	1.2E-06	1.1E-06	1.1E-06	1.1E-06	1.3E-06	1.4E-06
NW	1.2E-06	1.2E-06	1.1E-06	1.1E-06	1.2E-06	1.3E-06	1.4E-06
WNW	1.2E-06	1.2E-06	1.1E-06	1.1E-06	1.1E-06	1.3E-06	1.3E-06
W	1.9E-06	1.9E-06	1.7E-06	1.8E-06	1.8E-06	2.1E-06	2.2E-06
WSW	2.5E-06	2.4E-06	2.2E-06	2.2E-06	2.3E-06	2.8E-06	2.8E-06
SW	1.4E-06	1.3E-06	1.2E-06	1.2E-06	1.3E-06	1.5E-06	1.5E-06
SSW	1.1E-06	1.0E-06	9.5E-07	9.6E-07	1.0E-06	1.2E-06	1.2E-06
S	1.2E-06	1.1E-06	1.0E-06	1.1E-06	1.1E-06	1.3E-06	1.3E-06
SSE	1.8E-06	1.8E-06	1.7E-06	1.7E-06	1.8E-06	2.0E-06	2.0E-06
SE	2.6E-06	2.6E-06	2.4E-06	2.4E-06	2.5E-06	2.8E-06	2.9E-06
ESE	2.9E-06	2.8E-06	2.6E-06	2.7E-06	2.8E-06	3.1E-06	3.1E-06
E	4.1E-06	4.0E-06	3.7E-06	3.7E-06	3.9E-06	4.5E-06	4.5E-06
ENE	4.7E-06	4.5E-06	4.2E-06	4.2E-06	4.4E-06	5.1E-06	5.2E-06
NE	4.2E-06	4.1E-06	3.7E-06	3.7E-06	3.9E-06	4.5E-06	4.6E-06
NNE	2.8E-06	2.7E-06	2.4E-06	2.5E-06	2.6E-06	3.0E-06	3.1E-06

000347

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1646	1143	939	940	1627	1681
N	1.2E-06	1.9E-06	2.3E-06	2.3E-06	1.2E-06	1.2E-06
NNW	8.3E-07	1.3E-06	1.6E-06	1.6E-06	8.5E-07	8.2E-07
NW	8.4E-07	1.3E-06	1.6E-06	1.6E-06	8.5E-07	8.2E-07
WNW	8.5E-07	1.2E-06	1.5E-06	1.5E-06	8.6E-07	8.3E-07
W	1.4E-06	2.0E-06	2.6E-06	2.6E-06	1.4E-06	1.3E-06
WSW	1.6E-06	2.6E-06	3.4E-06	3.4E-06	1.6E-06	1.6E-06
SW	9.0E-07	1.4E-06	1.9E-06	1.9E-06	9.1E-07	8.7E-07
SSW	7.3E-07	1.1E-06	1.4E-06	1.4E-06	7.4E-07	7.1E-07
S	8.2E-07	1.2E-06	1.5E-06	1.5E-06	8.3E-07	8.0E-07
SSE	1.4E-06	1.9E-06	2.3E-06	2.3E-06	1.4E-06	1.4E-06
SE	2.1E-06	2.7E-06	3.3E-06	3.3E-06	2.1E-06	2.0E-06
ESE	2.2E-06	3.0E-06	3.6E-06	3.6E-06	2.2E-06	2.2E-06
E	3.0E-06	4.3E-06	5.3E-06	5.3E-06	3.0E-06	2.9E-06
ENE	3.2E-06	4.9E-06	6.1E-06	6.1E-06	3.3E-06	3.2E-06
NE	2.9E-06	4.3E-06	5.5E-06	5.5E-06	2.9E-06	2.8E-06
NNE	1.9E-06	2.9E-06	3.7E-06	3.7E-06	1.9E-06	1.8E-06

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m) 1368	1351	2156	1815	1523	1161	1163
N	1.9E-11	1.9E-11	1.1E-11	1.4E-11	1.7E-11	2.3E-11	2.3E-11
NNW	1.3E-11	1.3E-11	7.6E-12	9.2E-12	1.1E-11	1.5E-11	1.5E-11
NW	1.3E-11	1.3E-11	7.7E-12	9.3E-12	1.1E-11	1.5E-11	1.5E-11
WNW	1.3E-11	1.3E-11	8.0E-12	9.5E-12	1.1E-11	1.5E-11	1.5E-11
W	2.1E-11	2.1E-11	1.3E-11	1.5E-11	1.8E-11	2.5E-11	2.5E-11
WSW	2.6E-11	2.6E-11	1.4E-11	1.8E-11	2.2E-11	3.2E-11	3.2E-11
SW	1.4E-11	1.4E-11	7.8E-12	9.8E-12	1.2E-11	1.8E-11	1.8E-11
SSW	1.1E-11	1.1E-11	6.5E-12	8.0E-12	9.8E-12	1.4E-11	1.4E-11
S	1.2E-11	1.2E-11	7.6E-12	9.1E-12	1.1E-11	1.5E-11	1.5E-11
SSE	2.0E-11	2.0E-11	1.4E-11	1.6E-11	1.8E-11	2.3E-11	2.3E-11
SE	3.0E-11	3.0E-11	2.2E-11	2.4E-11	2.7E-11	3.4E-11	3.4E-11
ESE	3.2E-11	3.2E-11	2.3E-11	2.6E-11	3.0E-11	3.7E-11	3.7E-11
E	4.5E-11	4.5E-11	2.9E-11	3.4E-11	4.0E-11	5.3E-11	5.3E-11
ENE	5.0E-11	5.1E-11	3.0E-11	3.7E-11	4.4E-11	6.1E-11	6.0E-11
NE	4.4E-11	4.5E-11	2.7E-11	3.2E-11	3.9E-11	5.4E-11	5.4E-11
NNE	2.9E-11	2.9E-11	1.7E-11	2.1E-11	2.5E-11	3.6E-11	3.6E-11

Direction	Distance (m) 1185	1212	1312	1296	1244	1101	1083
N	2.2E-11	2.2E-11	2.0E-11	2.0E-11	2.1E-11	2.4E-11	2.5E-11
NNW	1.5E-11	1.5E-11	1.3E-11	1.4E-11	1.4E-11	1.7E-11	1.7E-11
NW	1.5E-11	1.5E-11	1.3E-11	1.4E-11	1.4E-11	1.7E-11	1.7E-11
WNW	1.5E-11	1.4E-11	1.3E-11	1.3E-11	1.4E-11	1.6E-11	1.6E-11
W	2.4E-11	2.4E-11	2.2E-11	2.2E-11	2.3E-11	2.7E-11	2.7E-11
WSW	3.2E-11	3.1E-11	2.7E-11	2.8E-11	2.9E-11	3.5E-11	3.6E-11
SW	1.7E-11	1.7E-11	1.5E-11	1.5E-11	1.6E-11	1.9E-11	1.9E-11
SSW	1.3E-11	1.3E-11	1.2E-11	1.2E-11	1.3E-11	1.5E-11	1.5E-11
S	1.5E-11	1.4E-11	1.3E-11	1.3E-11	1.4E-11	1.6E-11	1.6E-11
SSE	2.3E-11	2.3E-11	2.1E-11	2.1E-11	2.2E-11	2.5E-11	2.5E-11
SE	3.3E-11	3.2E-11	3.0E-11	3.1E-11	3.2E-11	3.5E-11	3.6E-11
ESE	3.6E-11	3.5E-11	3.3E-11	3.3E-11	3.5E-11	3.9E-11	3.9E-11
E	5.2E-11	5.1E-11	4.7E-11	4.7E-11	4.9E-11	5.6E-11	5.7E-11
ENE	5.9E-11	5.8E-11	5.3E-11	5.3E-11	5.6E-11	6.4E-11	6.6E-11
NE	5.3E-11	5.1E-11	4.7E-11	4.7E-11	5.0E-11	5.8E-11	5.9E-11
NNE	3.5E-11	3.4E-11	3.1E-11	3.1E-11	3.3E-11	3.8E-11	3.9E-11

000349

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1646	1143	939	940	1627	1681
N	1.5E-11	2.3E-11	3.0E-11	3.0E-11	1.6E-11	1.5E-11
NNW	1.0E-11	1.6E-11	2.0E-11	2.0E-11	1.0E-11	1.0E-11
NW	1.0E-11	1.6E-11	2.0E-11	2.0E-11	1.1E-11	1.0E-11
WNW	1.0E-11	1.5E-11	1.9E-11	1.9E-11	1.1E-11	1.0E-11
W	1.7E-11	2.5E-11	3.2E-11	3.2E-11	1.7E-11	1.7E-11
WSW	2.0E-11	3.3E-11	4.4E-11	4.4E-11	2.0E-11	2.0E-11
SW	1.1E-11	1.8E-11	2.4E-11	2.4E-11	1.1E-11	1.1E-11
SSW	8.9E-12	1.4E-11	1.8E-11	1.8E-11	9.0E-12	8.7E-12
S	1.0E-11	1.5E-11	1.9E-11	1.9E-11	1.0E-11	9.8E-12
SSE	1.7E-11	2.4E-11	2.9E-11	2.9E-11	1.7E-11	1.7E-11
SE	2.6E-11	3.4E-11	4.1E-11	4.1E-11	2.6E-11	2.6E-11
ESE	2.8E-11	3.7E-11	4.6E-11	4.6E-11	2.8E-11	2.8E-11
E	3.8E-11	5.4E-11	6.8E-11	6.7E-11	3.8E-11	3.7E-11
ENE	4.1E-11	6.2E-11	7.8E-11	7.8E-11	4.1E-11	4.0E-11
NE	3.6E-11	5.5E-11	7.0E-11	7.0E-11	3.6E-11	3.5E-11
NNE	2.3E-11	3.6E-11	4.7E-11	4.7E-11	2.4E-11	2.3E-11

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Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Apr 7, 1998 3:56 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

4.49E-06

At This Location: 1220 Meters East Northeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Building 53 Bio-Assay & Low-Level Lab Hoods [G2]

Dataset Name: 97-Z006-G2
Dataset Date: Apr 7, 1998 12:35 am
Wind File: WNDFILES\97STAR.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 1220 Meters East Northeast
Lifetime Fatal Cancer Risk: 5.71E-11

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	1.44E-08
BREAST	1.64E-08
R MAR	6.24E-07
LUNGS	3.38E-05
THYROID	1.40E-08
ENDOST	8.26E-06
RMNDR	3.71E-07
EFFEC	4.49E-06

000352

RADIONUCLIDE EMISSIONS DURING THE YEAR 1997

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	1.00	1.6E-08	1.6E-08
U-235	Y	1.00	8.7E-10	8.7E-10
U-236	Y	1.00	6.4E-10	6.4E-10
U-238	Y	1.00	1.8E-08	1.8E-08
RA-226	W	1.00	1.2E-11	1.2E-11
RA-228	W	1.00	4.7E-11	4.7E-11
TH-228	Y	1.00	4.9E-10	4.9E-10
TH-230	Y	1.00	1.5E-09	1.5E-09
TH-232	Y	1.00	7.8E-11	7.8E-11
TH-234	Y	1.00	7.3E-08	7.3E-08

SITE INFORMATION

Temperature: 11 degrees C
Precipitation: 102 cm/y
Mixing Height: 950 m

SOURCE INFORMATION

Source Number:	1
Stack Height (m):	11.89
Diameter (m):	0.28
Plume Rise Momentum (m/s): (Exit Velocity)	4.62E+00

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

1330	1703	2253	1670	2391	2493	2050	1807	1220	2110
2180	1879	2553	1849	2147	2240	2196	1980	2013	1809

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Apr 7, 1998 3:56 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Building 53 Bio-Assay & Low-Level Lab Hoods [G2]

Dataset Name: 97-Z006-G2
Dataset Date: Apr 7, 1998 12:35 am
Wind File: WNDFILES\97STAR.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	1.44E-08
BREAST	1.64E-08
R MAR	6.24E-07
LUNGS	3.38E-05
THYROID	1.40E-08
ENDOST	8.26E-06
RMNDR	3.71E-07
EFFEC	4.49E-06

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	2.67E-07
INHALATION	4.23E-06
AIR IMMERSION	3.54E-13
GROUND SURFACE	2.86E-09
INTERNAL	4.49E-06
EXTERNAL	2.86E-09
TOTAL	4.50E-06

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	1.95E-06
U-235	9.80E-08
U-236	7.16E-08
U-238	1.93E-06
RA-226	1.94E-10
RA-228	3.14E-10
TH-228	1.06E-07
TH-230	3.12E-07
TH-232	2.39E-08
TH-234	5.22E-09
TOTAL	4.50E-06

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	6.14E-13
BONE	4.07E-13
THYROID	3.23E-15
BREAST	3.65E-14
LUNG	5.51E-11
STOMACH	2.43E-14
BOWEL	6.41E-14
LIVER	2.92E-14
PANCREAS	1.41E-14
URINARY	7.72E-13
OTHER	1.73E-14
TOTAL	5.71E-11

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	1.42E-12
INHALATION	5.56E-11
AIR IMMERSION	7.90E-18
GROUND SURFACE	6.58E-14
INTERNAL	5.70E-11
EXTERNAL	6.58E-14
TOTAL	5.71E-11

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	2.49E-11
U-235	1.28E-12
U-236	9.18E-13
U-238	2.50E-11
RA-226	2.52E-15
RA-228	3.16E-15
TH-228	2.13E-12
TH-230	2.55E-12
TH-232	1.35E-13
TH-234	1.62E-13
TOTAL	5.71E-11

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	1330	1703	2253	1670	2391	2493	2050
N	1.5E-06	1.2E-06	8.6E-07	1.2E-06	8.1E-07	7.7E-07	9.6E-07
NNW	1.0E-06	7.9E-07	5.8E-07	8.0E-07	5.4E-07	5.1E-07	6.4E-07
NW	1.0E-06	7.9E-07	5.8E-07	8.1E-07	5.5E-07	5.2E-07	6.5E-07
WNW	1.0E-06	8.0E-07	6.1E-07	8.2E-07	5.7E-07	5.5E-07	6.7E-07
W	1.7E-06	1.3E-06	9.7E-07	1.3E-06	9.1E-07	8.7E-07	1.1E-06
WSW	2.1E-06	1.5E-06	1.1E-06	1.6E-06	9.7E-07	9.2E-07	1.2E-06
SW	1.2E-06	8.4E-07	5.9E-07	8.6E-07	5.5E-07	5.2E-07	6.7E-07
SSW	9.2E-07	6.9E-07	5.0E-07	7.0E-07	4.7E-07	4.5E-07	5.6E-07
S	1.0E-06	7.7E-07	5.8E-07	7.9E-07	5.5E-07	5.2E-07	6.4E-07
SSE	1.6E-06	1.3E-06	1.1E-06	1.4E-06	1.0E-06	9.8E-07	1.2E-06
SE	2.4E-06	2.0E-06	1.7E-06	2.0E-06	1.6E-06	1.5E-06	1.8E-06
ESE	2.6E-06	2.2E-06	1.8E-06	2.2E-06	1.7E-06	1.6E-06	1.9E-06
E	3.6E-06	2.9E-06	2.2E-06	2.9E-06	2.1E-06	2.0E-06	2.4E-06
ENE	4.1E-06	3.1E-06	2.3E-06	3.2E-06	2.1E-06	2.0E-06	2.5E-06
NE	3.6E-06	2.7E-06	2.0E-06	2.8E-06	1.9E-06	1.8E-06	2.2E-06
NNE	2.4E-06	1.8E-06	1.3E-06	1.8E-06	1.2E-06	1.1E-06	1.4E-06

	Distance (m)						
Direction	1807	1220	2110	2180	1879	2553	1849
N	1.1E-06	1.7E-06	9.3E-07	8.9E-07	1.1E-06	7.5E-07	1.1E-06
NNW	7.4E-07	1.2E-06	6.2E-07	6.0E-07	7.0E-07	5.0E-07	7.2E-07
NW	7.4E-07	1.2E-06	6.3E-07	6.1E-07	7.1E-07	5.1E-07	7.3E-07
WNW	7.6E-07	1.1E-06	6.5E-07	6.3E-07	7.3E-07	5.4E-07	7.4E-07
W	1.2E-06	1.9E-06	1.0E-06	1.0E-06	1.2E-06	8.5E-07	1.2E-06
WSW	1.4E-06	2.4E-06	1.1E-06	1.1E-06	1.3E-06	8.9E-07	1.4E-06
SW	7.8E-07	1.3E-06	6.5E-07	6.2E-07	7.4E-07	5.1E-07	7.6E-07
SSW	6.4E-07	1.0E-06	5.4E-07	5.2E-07	6.1E-07	4.3E-07	6.2E-07
S	7.3E-07	1.1E-06	6.2E-07	6.0E-07	7.0E-07	5.1E-07	7.1E-07
SSE	1.3E-06	1.8E-06	1.1E-06	1.1E-06	1.2E-06	9.5E-07	1.3E-06
SE	1.9E-06	2.5E-06	1.7E-06	1.7E-06	1.9E-06	1.5E-06	1.9E-06
ESE	2.1E-06	2.8E-06	1.9E-06	1.8E-06	2.0E-06	1.6E-06	2.0E-06
E	2.7E-06	4.0E-06	2.4E-06	2.3E-06	2.6E-06	2.0E-06	2.7E-06
ENE	2.9E-06	4.5E-06	2.5E-06	2.4E-06	2.8E-06	2.0E-06	2.8E-06
NE	2.6E-06	4.0E-06	2.1E-06	2.1E-06	2.4E-06	1.7E-06	2.5E-06
NNE	1.6E-06	2.6E-06	1.4E-06	1.3E-06	1.6E-06	1.1E-06	1.6E-06

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	2147	2240	2196	1980	2013	1809
N	9.1E-07	8.7E-07	8.9E-07	9.9E-07	9.7E-07	1.1E-06
NNW	6.1E-07	5.8E-07	5.9E-07	6.6E-07	6.5E-07	7.4E-07
NW	6.2E-07	5.9E-07	6.0E-07	6.7E-07	6.6E-07	7.4E-07
WNW	6.4E-07	6.1E-07	6.3E-07	6.9E-07	6.8E-07	7.6E-07
W	1.0E-06	9.7E-07	9.9E-07	1.1E-06	1.1E-06	1.2E-06
WSW	1.1E-06	1.1E-06	1.1E-06	1.2E-06	1.2E-06	1.4E-06
SW	6.3E-07	6.0E-07	6.1E-07	7.0E-07	6.8E-07	7.8E-07
SSW	5.3E-07	5.0E-07	5.1E-07	5.8E-07	5.7E-07	6.4E-07
S	6.1E-07	5.8E-07	6.0E-07	6.6E-07	6.5E-07	7.3E-07
SSE	1.1E-06	1.1E-06	1.1E-06	1.2E-06	1.2E-06	1.3E-06
SE	1.7E-06	1.7E-06	1.7E-06	1.8E-06	1.8E-06	1.9E-06
ESE	1.8E-06	1.8E-06	1.8E-06	1.9E-06	1.9E-06	2.1E-06
E	2.3E-06	2.2E-06	2.3E-06	2.5E-06	2.5E-06	2.7E-06
ENE	2.4E-06	2.3E-06	2.3E-06	2.6E-06	2.6E-06	2.9E-06
NE	2.1E-06	2.0E-06	2.1E-06	2.3E-06	2.3E-06	2.6E-06
NNE	1.3E-06	1.3E-06	1.3E-06	1.5E-06	1.4E-06	1.6E-06

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m) 1330	1703	2253	1670	2391	2493	2050
N	1.9E-11	1.5E-11	1.1E-11	1.5E-11	1.0E-11	9.6E-12	1.2E-11
NNW	1.3E-11	9.8E-12	7.1E-12	1.0E-11	6.6E-12	6.3E-12	7.9E-12
NW	1.3E-11	9.9E-12	7.2E-12	1.0E-11	6.7E-12	6.4E-12	8.0E-12
WNW	1.3E-11	1.0E-11	7.5E-12	1.0E-11	7.1E-12	6.8E-12	8.3E-12
W	2.1E-11	1.6E-11	1.2E-11	1.7E-11	1.1E-11	1.1E-11	1.3E-11
WSW	2.7E-11	1.9E-11	1.3E-11	2.0E-11	1.2E-11	1.1E-11	1.5E-11
SW	1.5E-11	1.0E-11	7.3E-12	1.1E-11	6.8E-12	6.4E-12	8.3E-12
SSW	1.1E-11	8.5E-12	6.1E-12	8.7E-12	5.7E-12	5.4E-12	6.8E-12
S	1.3E-11	9.6E-12	7.1E-12	9.8E-12	6.7E-12	6.4E-12	7.9E-12
SSE	2.1E-11	1.7E-11	1.3E-11	1.7E-11	1.3E-11	1.2E-11	1.4E-11
SE	3.0E-11	2.5E-11	2.1E-11	2.6E-11	2.0E-11	1.9E-11	2.2E-11
ESE	3.3E-11	2.7E-11	2.2E-11	2.8E-11	2.1E-11	2.0E-11	2.4E-11
E	4.6E-11	3.6E-11	2.8E-11	3.7E-11	2.6E-11	2.5E-11	3.1E-11
ENE	5.2E-11	3.9E-11	2.9E-11	4.0E-11	2.7E-11	2.6E-11	3.2E-11
NE	4.6E-11	3.5E-11	2.5E-11	3.5E-11	2.4E-11	2.2E-11	2.8E-11
NNE	3.0E-11	2.2E-11	1.6E-11	2.3E-11	1.5E-11	1.4E-11	1.8E-11

Direction	Distance (m) 1807	1220	2110	2180	1879	2553	1849
N	1.4E-11	2.1E-11	1.2E-11	1.1E-11	1.3E-11	9.3E-12	1.3E-11
NNW	9.1E-12	1.4E-11	7.6E-12	7.4E-12	8.7E-12	6.1E-12	8.9E-12
NW	9.2E-12	1.5E-11	7.8E-12	7.5E-12	8.8E-12	6.2E-12	9.0E-12
WNW	9.4E-12	1.4E-11	8.0E-12	7.8E-12	9.0E-12	6.6E-12	9.2E-12
W	1.5E-11	2.3E-11	1.3E-11	1.3E-11	1.5E-11	1.1E-11	1.5E-11
WSW	1.8E-11	3.0E-11	1.4E-11	1.4E-11	1.7E-11	1.1E-11	1.7E-11
SW	9.7E-12	1.6E-11	8.0E-12	7.6E-12	9.2E-12	6.2E-12	9.4E-12
SSW	7.9E-12	1.3E-11	6.6E-12	6.4E-12	7.6E-12	5.3E-12	7.7E-12
S	9.0E-12	1.4E-11	7.7E-12	7.4E-12	8.7E-12	6.2E-12	8.8E-12
SSE	1.6E-11	2.2E-11	1.4E-11	1.4E-11	1.5E-11	1.2E-11	1.6E-11
SE	2.4E-11	3.2E-11	2.2E-11	2.1E-11	2.4E-11	1.9E-11	2.4E-11
ESE	2.6E-11	3.5E-11	2.3E-11	2.3E-11	2.5E-11	2.0E-11	2.6E-11
E	3.4E-11	5.0E-11	3.0E-11	2.9E-11	3.3E-11	2.5E-11	3.4E-11
ENE	3.7E-11	5.7E-11	3.1E-11	3.0E-11	3.5E-11	2.5E-11	3.6E-11
NE	3.2E-11	5.1E-11	2.7E-11	2.6E-11	3.1E-11	2.2E-11	3.1E-11
NNE	2.1E-11	3.3E-11	1.7E-11	1.7E-11	2.0E-11	1.4E-11	2.0E-11

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INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	2147	2240	2196	1980	2013	1809
N	1.1E-11	1.1E-11	1.1E-11	1.2E-11	1.2E-11	1.4E-11
NNW	7.5E-12	7.1E-12	7.3E-12	8.2E-12	8.1E-12	9.1E-12
NW	7.6E-12	7.3E-12	7.4E-12	8.3E-12	8.2E-12	9.2E-12
WNW	7.9E-12	7.6E-12	7.7E-12	8.6E-12	8.4E-12	9.4E-12
W	1.3E-11	1.2E-11	1.2E-11	1.4E-11	1.4E-11	1.5E-11
WSW	1.4E-11	1.3E-11	1.4E-11	1.6E-11	1.5E-11	1.8E-11
SW	7.8E-12	7.4E-12	7.6E-12	8.6E-12	8.5E-12	9.7E-12
SSW	6.5E-12	6.2E-12	6.3E-12	7.1E-12	7.0E-12	7.9E-12
S	7.5E-12	7.2E-12	7.3E-12	8.2E-12	8.0E-12	9.0E-12
SSE	1.4E-11	1.3E-11	1.4E-11	1.5E-11	1.5E-11	1.6E-11
SE	2.2E-11	2.1E-11	2.1E-11	2.3E-11	2.3E-11	2.4E-11
ESE	2.3E-11	2.2E-11	2.3E-11	2.4E-11	2.4E-11	2.6E-11
E	2.9E-11	2.8E-11	2.9E-11	3.2E-11	3.1E-11	3.4E-11
ENE	3.0E-11	2.9E-11	3.0E-11	3.3E-11	3.3E-11	3.7E-11
NE	2.7E-11	2.5E-11	2.6E-11	2.9E-11	2.9E-11	3.2E-11
NNE	1.7E-11	1.6E-11	1.6E-11	1.9E-11	1.8E-11	2.1E-11

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Apr 7, 1998 4:03 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

2.11E-04

At This Location: 908 Meters East

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Building 65 Fugitive Emissions [G1]

Dataset Name: 97-Z024-G1
Dataset Date: Apr 7, 1998 12:16 am
Wind File: WNDFILES\97STAR.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 908 Meters East
Lifetime Fatal Cancer Risk: 2.44E-09

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	1.59E-06
BREAST	1.60E-06
R MAR	9.89E-05
LUNGS	1.34E-03
THYROID	1.58E-06
ENDOST	1.22E-03
RMNDR	3.08E-06
EFFEC	2.11E-04

RADIONUCLIDE EMISSIONS DURING THE YEAR 1997

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
AC-228	Y	1.00	1.1E-07	1.1E-07
BI-212	W	1.00	1.1E-07	1.1E-07
PB-212	D	1.00	1.1E-07	1.1E-07
PO-212	W	1.00	6.7E-08	6.7E-08
PO-216	W	1.00	1.1E-07	1.1E-07
RA-224	W	1.00	1.1E-07	1.1E-07
RA-228	W	1.00	1.1E-07	1.1E-07
TH-228	Y	1.00	1.1E-07	1.1E-07
TH-232	Y	1.00	1.1E-07	1.1E-07
TL-208	D	1.00	3.8E-08	3.8E-08

SITE INFORMATION

Temperature: 11 degrees C
Precipitation: 102 cm/y
Mixing Height: 950 m

SOURCE INFORMATION

Source Number: 1

Stack Height (m): 1.00
Diameter (m): 0.30

Plume Rise
Momentum (m/s): 1.00E+00
(Exit Velocity)

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

908	913	1855	1648	1437	1388	1534	1597	1630	1759
1749	1719	1576	1555	2072	1510	1088	1051	1289	1233

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Apr 7, 1998 4:03 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Building 65 Fugitive Emissions [G1]

Dataset Name: 97-Z024-G1
Dataset Date: Apr 7, 1998 12:16 am
Wind File: WNDFILES\97STAR.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	1.59E-06
BREAST	1.60E-06
R MAR	9.89E-05
LUNGS	1.34E-03
THYROID	1.58E-06
ENDOST	1.22E-03
RMNDR	3.08E-06
EFFEC	2.11E-04

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	2.90E-06
INHALATION	2.08E-04
AIR IMMERSION	2.76E-10
GROUND SURFACE	4.73E-09
INTERNAL	2.11E-04
EXTERNAL	5.01E-09
TOTAL	2.11E-04

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
AC-228	2.83E-08
BI-212	9.44E-09
PB-212	5.53E-08
PO-212	0.00E+00
PO-216	0.00E+00
RA-224	1.18E-06
RA-228	2.32E-06
TH-228	8.44E-05
TH-232	1.23E-04
TL-208	1.90E-11
TOTAL	2.11E-04

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	8.79E-11
BONE	5.75E-11
THYROID	2.66E-13
BREAST	2.25E-12
LUNG	2.28E-09
STOMACH	1.93E-12
BOWEL	2.05E-12
LIVER	5.85E-12
PANCREAS	1.39E-12
URINARY	8.49E-13
OTHER	1.70E-12
TOTAL	2.44E-09

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	1.57E-11
INHALATION	2.42E-09
AIR IMMERSION	6.61E-15
GROUND SURFACE	1.03E-13
INTERNAL	2.44E-09
EXTERNAL	1.10E-13
TOTAL	2.44E-09

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
AC-228	5.72E-13
BI-212	1.21E-13
PB-212	9.48E-13
PO-212	0.00E+00
PO-216	0.00E+00
RA-224	2.66E-11
RA-228	2.44E-11
TH-228	1.69E-09
TH-232	6.95E-10
TL-208	4.66E-16
TOTAL	2.44E-09

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	908	913	1855	1648	1437	1388	1534
N	7.2E-05	7.1E-05	1.9E-05	2.4E-05	3.0E-05	3.3E-05	2.7E-05
NNW	4.6E-05	4.6E-05	1.2E-05	1.5E-05	2.0E-05	2.1E-05	1.7E-05
NW	4.7E-05	4.7E-05	1.2E-05	1.5E-05	2.0E-05	2.1E-05	1.8E-05
WNW	5.4E-05	5.3E-05	1.4E-05	1.7E-05	2.2E-05	2.4E-05	2.0E-05
W	8.5E-05	8.4E-05	2.2E-05	2.8E-05	3.6E-05	3.8E-05	3.2E-05
WSW	7.5E-05	7.5E-05	2.1E-05	2.6E-05	3.3E-05	3.5E-05	2.9E-05
SW	4.4E-05	4.4E-05	1.2E-05	1.5E-05	1.9E-05	2.0E-05	1.7E-05
SSW	3.9E-05	3.9E-05	1.1E-05	1.3E-05	1.7E-05	1.8E-05	1.5E-05
S	5.0E-05	4.9E-05	1.3E-05	1.6E-05	2.1E-05	2.2E-05	1.9E-05
SSE	1.1E-04	1.1E-04	2.7E-05	3.4E-05	4.4E-05	4.7E-05	3.9E-05
SE	1.8E-04	1.8E-04	4.4E-05	5.6E-05	7.3E-05	7.8E-05	6.4E-05
ESE	1.9E-04	1.9E-04	4.7E-05	5.9E-05	7.7E-05	8.3E-05	6.8E-05
E	2.1E-04	2.1E-04	5.4E-05	6.7E-05	8.8E-05	9.4E-05	7.7E-05
ENE	2.0E-04	1.9E-04	5.1E-05	6.4E-05	8.2E-05	8.8E-05	7.3E-05
NE	1.7E-04	1.7E-04	4.4E-05	5.5E-05	7.1E-05	7.6E-05	6.3E-05
NNE	1.0E-04	1.0E-04	2.7E-05	3.4E-05	4.4E-05	4.7E-05	3.9E-05

	Distance (m)						
Direction	1597	1630	1759	1749	1719	1576	1555
N	2.5E-05	2.4E-05	2.1E-05	2.1E-05	2.2E-05	2.6E-05	2.6E-05
NNW	1.6E-05	1.6E-05	1.3E-05	1.4E-05	1.4E-05	1.6E-05	1.7E-05
NW	1.6E-05	1.6E-05	1.4E-05	1.4E-05	1.4E-05	1.7E-05	1.7E-05
WNW	1.8E-05	1.8E-05	1.5E-05	1.5E-05	1.6E-05	1.9E-05	1.9E-05
W	2.9E-05	2.8E-05	2.4E-05	2.5E-05	2.6E-05	3.0E-05	3.1E-05
WSW	2.7E-05	2.6E-05	2.3E-05	2.3E-05	2.4E-05	2.8E-05	2.8E-05
SW	1.6E-05	1.5E-05	1.3E-05	1.3E-05	1.4E-05	1.6E-05	1.7E-05
SSW	1.4E-05	1.3E-05	1.2E-05	1.2E-05	1.2E-05	1.4E-05	1.4E-05
S	1.7E-05	1.7E-05	1.4E-05	1.5E-05	1.5E-05	1.8E-05	1.8E-05
SSE	3.6E-05	3.4E-05	3.0E-05	3.0E-05	3.1E-05	3.7E-05	3.8E-05
SE	5.9E-05	5.7E-05	4.9E-05	5.0E-05	5.1E-05	6.1E-05	6.2E-05
ESE	6.3E-05	6.0E-05	5.2E-05	5.3E-05	5.5E-05	6.4E-05	6.6E-05
E	7.1E-05	6.9E-05	5.9E-05	6.0E-05	6.2E-05	7.3E-05	7.5E-05
ENE	6.7E-05	6.5E-05	5.6E-05	5.7E-05	5.9E-05	6.9E-05	7.1E-05
NE	5.8E-05	5.6E-05	4.9E-05	4.9E-05	5.1E-05	6.0E-05	6.1E-05
NNE	3.6E-05	3.5E-05	3.0E-05	3.0E-05	3.1E-05	3.7E-05	3.8E-05

000373

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	2072	1510	1088	1051	1289	1233
N	1.5E-05	2.8E-05	5.1E-05	5.4E-05	3.7E-05	4.1E-05
NNW	9.9E-06	1.8E-05	3.3E-05	3.5E-05	2.4E-05	2.6E-05
NW	1.0E-05	1.8E-05	3.3E-05	3.5E-05	2.5E-05	2.7E-05
WNW	1.1E-05	2.0E-05	3.8E-05	4.0E-05	2.8E-05	3.0E-05
W	1.8E-05	3.2E-05	6.0E-05	6.4E-05	4.4E-05	4.8E-05
WSW	1.7E-05	3.0E-05	5.4E-05	5.7E-05	4.0E-05	4.3E-05
SW	9.9E-06	1.7E-05	3.1E-05	3.3E-05	2.3E-05	2.5E-05
SSW	8.6E-06	1.5E-05	2.8E-05	3.0E-05	2.1E-05	2.2E-05
S	1.1E-05	1.9E-05	3.5E-05	3.8E-05	2.6E-05	2.8E-05
SSE	2.2E-05	4.0E-05	7.5E-05	8.0E-05	5.4E-05	5.9E-05
SE	3.5E-05	6.6E-05	1.2E-04	1.3E-04	9.0E-05	9.8E-05
ESE	3.8E-05	7.0E-05	1.3E-04	1.4E-04	9.6E-05	1.0E-04
E	4.3E-05	7.9E-05	1.5E-04	1.6E-04	1.1E-04	1.2E-04
ENE	4.1E-05	7.5E-05	1.4E-04	1.5E-04	1.0E-04	1.1E-04
NE	3.6E-05	6.5E-05	1.2E-04	1.3E-04	8.8E-05	9.5E-05
NNE	2.2E-05	4.0E-05	7.3E-05	7.7E-05	5.4E-05	5.8E-05

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m) 908	913	1855	1648	1437	1388	1534
N	8.3E-10	8.2E-10	2.2E-10	2.7E-10	3.5E-10	3.7E-10	3.1E-10
NNW	5.3E-10	5.3E-10	1.4E-10	1.7E-10	2.2E-10	2.4E-10	2.0E-10
NW	5.4E-10	5.4E-10	1.4E-10	1.8E-10	2.3E-10	2.4E-10	2.0E-10
WNW	6.2E-10	6.1E-10	1.6E-10	2.0E-10	2.6E-10	2.8E-10	2.3E-10
W	9.8E-10	9.7E-10	2.5E-10	3.2E-10	4.1E-10	4.4E-10	3.6E-10
WSW	8.7E-10	8.6E-10	2.4E-10	2.9E-10	3.8E-10	4.0E-10	3.3E-10
SW	5.1E-10	5.0E-10	1.4E-10	1.7E-10	2.2E-10	2.3E-10	1.9E-10
SSW	4.5E-10	4.5E-10	1.2E-10	1.5E-10	1.9E-10	2.1E-10	1.7E-10
S	5.7E-10	5.7E-10	1.5E-10	1.9E-10	2.4E-10	2.6E-10	2.1E-10
SSE	1.2E-09	1.2E-09	3.1E-10	3.9E-10	5.1E-10	5.4E-10	4.4E-10
SE	2.0E-09	2.0E-09	5.1E-10	6.4E-10	8.4E-10	9.0E-10	7.3E-10
ESE	2.2E-09	2.1E-09	5.4E-10	6.8E-10	8.9E-10	9.6E-10	7.8E-10
E	2.4E-09	2.4E-09	6.2E-10	7.8E-10	1.0E-09	1.1E-09	8.9E-10
ENE	2.3E-09	2.2E-09	5.9E-10	7.3E-10	9.5E-10	1.0E-09	8.4E-10
NE	2.0E-09	1.9E-09	5.1E-10	6.4E-10	8.2E-10	8.8E-10	7.2E-10
NNE	1.2E-09	1.2E-09	3.1E-10	3.9E-10	5.0E-10	5.4E-10	4.4E-10

Direction	Distance (m) 1597	1630	1759	1749	1719	1576	1555
N	2.9E-10	2.8E-10	2.4E-10	2.4E-10	2.5E-10	2.9E-10	3.0E-10
NNW	1.8E-10	1.8E-10	1.5E-10	1.6E-10	1.6E-10	1.9E-10	1.9E-10
NW	1.9E-10	1.8E-10	1.6E-10	1.6E-10	1.6E-10	1.9E-10	2.0E-10
WNW	2.1E-10	2.0E-10	1.7E-10	1.8E-10	1.8E-10	2.2E-10	2.2E-10
W	3.4E-10	3.2E-10	2.8E-10	2.8E-10	2.9E-10	3.5E-10	3.5E-10
WSW	3.1E-10	3.0E-10	2.6E-10	2.6E-10	2.7E-10	3.2E-10	3.3E-10
SW	1.8E-10	1.7E-10	1.5E-10	1.5E-10	1.6E-10	1.8E-10	1.9E-10
SSW	1.6E-10	1.5E-10	1.3E-10	1.3E-10	1.4E-10	1.6E-10	1.7E-10
S	2.0E-10	1.9E-10	1.6E-10	1.7E-10	1.7E-10	2.0E-10	2.1E-10
SSE	4.1E-10	4.0E-10	3.4E-10	3.5E-10	3.6E-10	4.2E-10	4.3E-10
SE	6.8E-10	6.5E-10	5.6E-10	5.7E-10	5.9E-10	7.0E-10	7.2E-10
ESE	7.2E-10	7.0E-10	6.0E-10	6.1E-10	6.3E-10	7.4E-10	7.6E-10
E	8.2E-10	7.9E-10	6.8E-10	6.9E-10	7.2E-10	8.4E-10	8.7E-10
ENE	7.8E-10	7.5E-10	6.5E-10	6.6E-10	6.8E-10	8.0E-10	8.2E-10
NE	6.7E-10	6.5E-10	5.6E-10	5.7E-10	5.9E-10	6.9E-10	7.1E-10
NNE	4.1E-10	4.0E-10	3.5E-10	3.5E-10	3.6E-10	4.2E-10	4.3E-10

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	2072	1510	1088	1051	1289	1233
N	1.8E-10	3.2E-10	5.9E-10	6.3E-10	4.3E-10	4.7E-10
NNW	1.1E-10	2.0E-10	3.8E-10	4.0E-10	2.8E-10	3.0E-10
NW	1.1E-10	2.1E-10	3.8E-10	4.1E-10	2.8E-10	3.1E-10
WNW	1.3E-10	2.3E-10	4.3E-10	4.6E-10	3.2E-10	3.5E-10
W	2.0E-10	3.7E-10	6.9E-10	7.4E-10	5.1E-10	5.5E-10
WSW	1.9E-10	3.4E-10	6.2E-10	6.6E-10	4.6E-10	5.0E-10
SW	1.1E-10	2.0E-10	3.6E-10	3.8E-10	2.7E-10	2.9E-10
SSW	9.7E-11	1.7E-10	3.2E-10	3.4E-10	2.4E-10	2.6E-10
S	1.2E-10	2.2E-10	4.1E-10	4.3E-10	3.0E-10	3.2E-10
SSE	2.5E-10	4.6E-10	8.6E-10	9.2E-10	6.3E-10	6.8E-10
SE	4.1E-10	7.6E-10	1.4E-09	1.5E-09	1.0E-09	1.1E-09
ESE	4.3E-10	8.0E-10	1.5E-09	1.6E-09	1.1E-09	1.2E-09
E	5.0E-10	9.1E-10	1.7E-09	1.8E-09	1.3E-09	1.4E-09
ENE	4.7E-10	8.6E-10	1.6E-09	1.7E-09	1.2E-09	1.3E-09
NE	4.1E-10	7.5E-10	1.4E-09	1.5E-09	1.0E-09	1.1E-09
NNE	2.5E-10	4.6E-10	8.4E-10	8.9E-10	6.2E-10	6.7E-10

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Apr 7, 1998 4:04 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

2.41E-04

At This Location: 851 Meters East

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1977

Comments: 1997 NESHAP Demonstration
Building 65 Fugitive Emissions [G2]

Dataset Name: 97-Z024-G2
Dataset Date: Apr 7, 1998 12:18 am
Wind File: WNDFILES\97STAR.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 851 Meters East
Lifetime Fatal Cancer Risk: 2.78E-09

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	1.77E-06
BREAST	1.79E-06
R MAR	1.12E-04
LUNGS	1.53E-03
THYROID	1.76E-06
ENDOST	1.39E-03
RMNDR	3.45E-06
EFFEC	2.41E-04

RADIONUCLIDE EMISSIONS DURING THE YEAR 1977

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
AC-228	Y	1.00	1.1E-07	1.1E-07
BI-212	W	1.00	1.1E-07	1.1E-07
PB-212	D	1.00	1.1E-07	1.1E-07
PO-212	W	1.00	6.7E-08	6.7E-08
PO-216	W	1.00	1.1E-07	1.1E-07
RA-224	W	1.00	1.1E-07	1.1E-07
RA-228	W	1.00	1.1E-07	1.1E-07
TH-228	Y	1.00	1.1E-07	1.1E-07
TH-232	Y	1.00	1.1E-07	1.1E-07
TL-208	D	1.00	3.8E-08	3.8E-08

SITE INFORMATION

Temperature: 11 degrees C
Precipitation: 102 cm/y
Mixing Height: 950 m

SOURCE INFORMATION

Source Number:	1
Stack Height (m):	1.00
Diameter (m):	0.30
Plume Rise Momentum (m/s): (Exit Velocity)	1.00E+00

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

851	1282	2246	1643	2205	2626	2361	1398	1553	1965
2023	1474	2684	1669	1859	1955	1918	2286	2316	1352

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Apr 7, 1998 4:04 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1977

Comments: 1997 NESHAP Demonstration
Building 65 Fugitive Emissions [G2]

Dataset Name: 97-Z024-G2
Dataset Date: Apr 7, 1998 12:18 am
Wind File: WNDFILES\97STAR.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	1.77E-06
BREAST	1.79E-06
R MAR	1.12E-04
LUNGS	1.53E-03
THYROID	1.76E-06
ENDOST	1.39E-03
RMNDR	3.45E-06
EFFEC	2.41E-04

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	3.17E-06
INHALATION	2.37E-04
AIR IMMERSION	3.17E-10
GROUND SURFACE	5.37E-09
INTERNAL	2.41E-04
EXTERNAL	5.69E-09
TOTAL	2.41E-04

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
AC-228	3.23E-08
BI-212	1.09E-08
PB-212	6.31E-08
PO-212	0.00E+00
PO-216	0.00E+00
RA-224	1.35E-06
RA-228	2.57E-06
TH-228	9.61E-05
TH-232	1.40E-04
TL-208	2.37E-11
TOTAL	2.41E-04

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	9.99E-11
BONE	6.54E-11
THYROID	2.97E-13
BREAST	2.51E-12
LUNG	2.59E-09
STOMACH	2.15E-12
BOWEL	2.28E-12
LIVER	6.61E-12
PANCREAS	1.55E-12
URINARY	9.50E-13
OTHER	1.89E-12
TOTAL	2.78E-09

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	1.72E-11
INHALATION	2.76E-09
AIR IMMERSION	7.61E-15
GROUND SURFACE	1.17E-13
INTERNAL	2.78E-09
EXTERNAL	1.25E-13
TOTAL	2.78E-09

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
AC-228	6.52E-13
BI-212	1.40E-13
PB-212	1.08E-12
PO-212	0.00E+00
PO-216	0.00E+00
RA-224	3.03E-11
RA-228	2.72E-11
TH-228	1.93E-09
TH-232	7.92E-10
TL-208	5.82E-16
TOTAL	2.78E-09

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	851	1282	2246	1643	2205	2626	2361
N	8.2E-05	3.8E-05	1.3E-05	2.4E-05	1.4E-05	1.0E-05	1.2E-05
NNW	5.2E-05	2.4E-05	8.6E-06	1.5E-05	8.8E-06	6.5E-06	7.8E-06
NW	5.4E-05	2.5E-05	8.7E-06	1.5E-05	8.9E-06	6.5E-06	7.9E-06
WNW	6.1E-05	2.8E-05	9.6E-06	1.7E-05	9.9E-06	7.2E-06	8.8E-06
W	9.7E-05	4.5E-05	1.5E-05	2.8E-05	1.6E-05	1.2E-05	1.4E-05
WSW	8.5E-05	4.0E-05	1.5E-05	2.6E-05	1.5E-05	1.1E-05	1.3E-05
SW	5.0E-05	2.3E-05	8.5E-06	1.5E-05	8.8E-06	6.5E-06	7.8E-06
SSW	4.5E-05	2.1E-05	7.4E-06	1.3E-05	7.6E-06	5.6E-06	6.8E-06
S	5.7E-05	2.6E-05	9.1E-06	1.6E-05	9.4E-06	6.9E-06	8.3E-06
SSE	1.2E-04	5.5E-05	1.9E-05	3.4E-05	1.9E-05	1.4E-05	1.7E-05
SE	2.0E-04	9.1E-05	3.0E-05	5.6E-05	3.1E-05	2.3E-05	2.8E-05
ESE	2.1E-04	9.7E-05	3.2E-05	5.9E-05	3.4E-05	2.4E-05	3.0E-05
E	2.4E-04	1.1E-04	3.7E-05	6.8E-05	3.9E-05	2.8E-05	3.4E-05
ENE	2.2E-04	1.0E-04	3.6E-05	6.4E-05	3.7E-05	2.7E-05	3.2E-05
NE	1.9E-04	8.9E-05	3.1E-05	5.5E-05	3.2E-05	2.3E-05	2.8E-05
NNE	1.2E-04	5.4E-05	1.9E-05	3.4E-05	2.0E-05	1.4E-05	1.7E-05

	Distance (m)						
Direction	1398	1553	1965	2023	1474	2684	1669
N	3.2E-05	2.6E-05	1.7E-05	1.6E-05	2.9E-05	9.6E-06	2.3E-05
NNW	2.1E-05	1.7E-05	1.1E-05	1.0E-05	1.9E-05	6.2E-06	1.5E-05
NW	2.1E-05	1.7E-05	1.1E-05	1.0E-05	1.9E-05	6.3E-06	1.5E-05
WNW	2.4E-05	1.9E-05	1.2E-05	1.2E-05	2.1E-05	7.0E-06	1.7E-05
W	3.8E-05	3.1E-05	2.0E-05	1.9E-05	3.4E-05	1.1E-05	2.7E-05
WSW	3.4E-05	2.8E-05	1.9E-05	1.8E-05	3.1E-05	1.1E-05	2.5E-05
SW	2.0E-05	1.7E-05	1.1E-05	1.0E-05	1.8E-05	6.3E-06	1.5E-05
SSW	1.8E-05	1.4E-05	9.3E-06	8.9E-06	1.6E-05	5.4E-06	1.3E-05
S	2.2E-05	1.8E-05	1.2E-05	1.1E-05	2.0E-05	6.6E-06	1.6E-05
SSE	4.6E-05	3.8E-05	2.4E-05	2.2E-05	4.2E-05	1.3E-05	3.3E-05
SE	7.7E-05	6.2E-05	3.9E-05	3.7E-05	6.9E-05	2.2E-05	5.4E-05
ESE	8.2E-05	6.6E-05	4.2E-05	3.9E-05	7.3E-05	2.3E-05	5.8E-05
E	9.3E-05	7.5E-05	4.8E-05	4.5E-05	8.3E-05	2.7E-05	6.6E-05
ENE	8.7E-05	7.1E-05	4.5E-05	4.3E-05	7.8E-05	2.6E-05	6.2E-05
NE	7.5E-05	6.1E-05	3.9E-05	3.7E-05	6.8E-05	2.2E-05	5.4E-05
NNE	4.6E-05	3.8E-05	2.4E-05	2.3E-05	4.1E-05	1.4E-05	3.3E-05

000386

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1859	1955	1918	2286	2316	1352
N	1.9E-05	1.7E-05	1.8E-05	1.3E-05	1.3E-05	3.4E-05
NNW	1.2E-05	1.1E-05	1.1E-05	8.3E-06	8.1E-06	2.2E-05
NW	1.2E-05	1.1E-05	1.2E-05	8.4E-06	8.2E-06	2.2E-05
WNW	1.4E-05	1.2E-05	1.3E-05	9.3E-06	9.1E-06	2.5E-05
W	2.2E-05	2.0E-05	2.1E-05	1.5E-05	1.5E-05	4.0E-05
WSW	2.1E-05	1.9E-05	1.9E-05	1.4E-05	1.4E-05	3.7E-05
SW	1.2E-05	1.1E-05	1.1E-05	8.3E-06	8.1E-06	2.1E-05
SSW	1.0E-05	9.4E-06	9.8E-06	7.2E-06	7.0E-06	1.9E-05
S	1.3E-05	1.2E-05	1.2E-05	8.8E-06	8.6E-06	2.4E-05
SSE	2.7E-05	2.4E-05	2.5E-05	1.8E-05	1.8E-05	5.0E-05
SE	4.4E-05	3.9E-05	4.1E-05	2.9E-05	2.9E-05	8.2E-05
ESE	4.7E-05	4.2E-05	4.4E-05	3.1E-05	3.1E-05	8.7E-05
E	5.3E-05	4.8E-05	5.0E-05	3.6E-05	3.5E-05	9.9E-05
ENE	5.1E-05	4.6E-05	4.8E-05	3.4E-05	3.4E-05	9.3E-05
NE	4.4E-05	4.0E-05	4.1E-05	3.0E-05	2.9E-05	8.0E-05
NNE	2.7E-05	2.5E-05	2.5E-05	1.9E-05	1.8E-05	4.9E-05

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m) 851	1282	2246	1643	2205	2626	2361
N	9.5E-10	4.3E-10	1.5E-10	2.7E-10	1.6E-10	1.1E-10	1.4E-10
NNW	6.0E-10	2.8E-10	9.8E-11	1.7E-10	1.0E-10	7.4E-11	8.9E-11
NW	6.2E-10	2.8E-10	9.9E-11	1.8E-10	1.0E-10	7.4E-11	9.0E-11
WNW	7.0E-10	3.2E-10	1.1E-10	2.0E-10	1.1E-10	8.2E-11	1.0E-10
W	1.1E-09	5.1E-10	1.8E-10	3.2E-10	1.8E-10	1.3E-10	1.6E-10
WSW	9.9E-10	4.6E-10	1.7E-10	3.0E-10	1.7E-10	1.3E-10	1.5E-10
SW	5.7E-10	2.7E-10	9.7E-11	1.7E-10	1.0E-10	7.4E-11	8.9E-11
SSW	5.1E-10	2.4E-10	8.4E-11	1.5E-10	8.7E-11	6.4E-11	7.7E-11
S	6.5E-10	3.0E-10	1.0E-10	1.9E-10	1.1E-10	7.8E-11	9.5E-11
SSE	1.4E-09	6.3E-10	2.1E-10	3.9E-10	2.2E-10	1.6E-10	1.9E-10
SE	2.3E-09	1.1E-09	3.5E-10	6.4E-10	3.6E-10	2.6E-10	3.2E-10
ESE	2.5E-09	1.1E-09	3.7E-10	6.9E-10	3.9E-10	2.8E-10	3.4E-10
E	2.8E-09	1.3E-09	4.3E-10	7.8E-10	4.4E-10	3.2E-10	3.9E-10
ENE	2.6E-09	1.2E-09	4.1E-10	7.4E-10	4.2E-10	3.1E-10	3.7E-10
NE	2.2E-09	1.0E-09	3.6E-10	6.4E-10	3.7E-10	2.7E-10	3.2E-10
NNE	1.3E-09	6.2E-10	2.2E-10	3.9E-10	2.3E-10	1.7E-10	2.0E-10

Direction	Distance (m) 1398	1553	1965	2023	1474	2684	1669
N	3.7E-10	3.0E-10	1.9E-10	1.8E-10	3.3E-10	1.1E-10	2.6E-10
NNW	2.4E-10	1.9E-10	1.2E-10	1.2E-10	2.1E-10	7.1E-11	1.7E-10
NW	2.4E-10	2.0E-10	1.3E-10	1.2E-10	2.2E-10	7.1E-11	1.7E-10
WNW	2.7E-10	2.2E-10	1.4E-10	1.3E-10	2.4E-10	7.9E-11	1.9E-10
W	4.3E-10	3.5E-10	2.3E-10	2.1E-10	3.9E-10	1.3E-10	3.1E-10
WSW	4.0E-10	3.3E-10	2.1E-10	2.0E-10	3.6E-10	1.2E-10	2.9E-10
SW	2.3E-10	1.9E-10	1.2E-10	1.2E-10	2.1E-10	7.1E-11	1.7E-10
SSW	2.0E-10	1.7E-10	1.1E-10	1.0E-10	1.8E-10	6.1E-11	1.5E-10
S	2.5E-10	2.1E-10	1.3E-10	1.3E-10	2.3E-10	7.5E-11	1.8E-10
SSE	5.3E-10	4.3E-10	2.7E-10	2.6E-10	4.8E-10	1.5E-10	3.8E-10
SE	8.9E-10	7.2E-10	4.5E-10	4.2E-10	7.9E-10	2.5E-10	6.2E-10
ESE	9.4E-10	7.6E-10	4.8E-10	4.5E-10	8.4E-10	2.7E-10	6.6E-10
E	1.1E-09	8.7E-10	5.5E-10	5.2E-10	9.6E-10	3.1E-10	7.6E-10
ENE	1.0E-09	8.2E-10	5.2E-10	4.9E-10	9.0E-10	2.9E-10	7.2E-10
NE	8.7E-10	7.1E-10	4.5E-10	4.3E-10	7.8E-10	2.6E-10	6.2E-10
NNE	5.3E-10	4.3E-10	2.8E-10	2.6E-10	4.8E-10	1.6E-10	3.8E-10

000388

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1859	1955	1918	2286	2316	1352
N	2.2E-10	2.0E-10	2.0E-10	1.5E-10	1.4E-10	3.9E-10
NNW	1.4E-10	1.3E-10	1.3E-10	9.5E-11	9.2E-11	2.5E-10
NW	1.4E-10	1.3E-10	1.3E-10	9.6E-11	9.3E-11	2.6E-10
WNW	1.6E-10	1.4E-10	1.5E-10	1.1E-10	1.0E-10	2.9E-10
W	2.5E-10	2.3E-10	2.4E-10	1.7E-10	1.7E-10	4.6E-10
WSW	2.4E-10	2.2E-10	2.2E-10	1.6E-10	1.6E-10	4.2E-10
SW	1.4E-10	1.2E-10	1.3E-10	9.4E-11	9.2E-11	2.4E-10
SSW	1.2E-10	1.1E-10	1.1E-10	8.1E-11	8.0E-11	2.2E-10
S	1.5E-10	1.3E-10	1.4E-10	1.0E-10	9.8E-11	2.7E-10
SSE	3.1E-10	2.8E-10	2.9E-10	2.1E-10	2.0E-10	5.7E-10
SE	5.0E-10	4.5E-10	4.7E-10	3.4E-10	3.3E-10	9.5E-10
ESE	5.4E-10	4.8E-10	5.0E-10	3.6E-10	3.5E-10	1.0E-09
E	6.1E-10	5.5E-10	5.8E-10	4.2E-10	4.1E-10	1.1E-09
ENE	5.8E-10	5.3E-10	5.5E-10	4.0E-10	3.9E-10	1.1E-09
NE	5.0E-10	4.6E-10	4.8E-10	3.4E-10	3.4E-10	9.2E-10
NNE	3.1E-10	2.8E-10	2.9E-10	2.1E-10	2.1E-10	5.6E-10

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Apr 27, 1998 8:51 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

2.46E-03

At This Location: 944 Meters East Northeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Building 71 - Vent [G1]

Dataset Name: 97-Z026-VENT-G1
Dataset Date: Apr 27, 1998 8:47 am
Wind File: WNDFILES\97STAR.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 944 Meters East Northeast
Lifetime Fatal Cancer Risk: 3.13E-08

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	7.55E-06
BREAST	8.58E-06
R MAR	3.35E-04
LUNGS	1.85E-02
THYROID	7.36E-06
ENDOST	4.43E-03
RMNDR	1.95E-04
EFFEC	2.46E-03

RADIONUCLIDE EMISSIONS DURING THE YEAR 1997

Nuclide	Class	Size	Source #1 Ci/y	Source #2 Ci/y	TOTAL Ci/y
U-234	Y	1.00	2.4E-06	2.9E-06	5.3E-06
U-235	Y	1.00	1.3E-07	1.5E-07	2.8E-07
U-236	Y	1.00	9.3E-08	1.1E-07	2.0E-07
U-238	Y	1.00	2.7E-06	3.2E-06	5.9E-06
RA-226	W	1.00	1.7E-09	2.0E-09	3.7E-09
RA-228	W	1.00	6.8E-09	8.2E-09	1.5E-08
TH-228	Y	1.00	7.2E-08	8.6E-08	1.6E-07
TH-230	Y	1.00	2.1E-07	2.5E-07	4.6E-07
TH-232	Y	1.00	1.1E-08	1.4E-08	2.5E-08
TH-234	Y	1.00	1.1E-05	1.3E-05	2.3E-05

SITE INFORMATION

Temperature:	11 degrees C
Precipitation:	102 cm/y
Mixing Height:	950 m

SOURCE INFORMATION

Source Number:	1	2
Stack Height (m):	4.60	2.00
Diameter (m):	0.46	1.67
Plume Rise Momentum (m/s): (Exit Velocity)	2.08E+00	9.31E+00

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

996	944	1689	1380	1126	1050	1255	1350	1388	1548
1549	1578	1504	1502	2105	1610	1326	1305	1633	1513

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Apr 27, 1998 8:51 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Building 71 - Vent [G1]

Dataset Name: 97-Z026-VENT-G1
Dataset Date: Apr 27, 1998 8:47 am
Wind File: WNDFILES\97STAR.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	7.55E-06
BREAST	8.58E-06
R MAR	3.35E-04
LUNGS	1.85E-02
THYROID	7.36E-06
ENDOST	4.43E-03
RMNDR	1.95E-04
EFFEC	2.46E-03

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	1.40E-04
INHALATION	2.32E-03
AIR IMMERSION	1.95E-10
GROUND SURFACE	1.48E-06
INTERNAL	2.46E-03
EXTERNAL	1.48E-06
TOTAL	2.46E-03

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	1.06E-03
U-235	5.33E-05
U-236	3.91E-05
U-238	1.06E-03
RA-226	1.03E-07
RA-228	1.66E-07
TH-228	5.82E-05
TH-230	1.71E-04
TH-232	1.31E-05
TH-234	2.80E-06
TOTAL	2.46E-03

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	3.28E-10
BONE	2.17E-10
THYROID	1.69E-12
BREAST	1.90E-11
LUNG	3.02E-08
STOMACH	1.27E-11
BOWEL	3.38E-11
LIVER	1.55E-11
PANCREAS	7.40E-12
URINARY	4.05E-10
OTHER	9.05E-12
TOTAL	3.13E-08

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	7.42E-10
INHALATION	3.05E-08
AIR IMMERSION	4.34E-15
GROUND SURFACE	3.40E-11
INTERNAL	3.12E-08
EXTERNAL	3.40E-11
TOTAL	3.13E-08

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	1.37E-08
U-235	6.99E-10
U-236	5.01E-10
U-238	1.37E-08
RA-226	1.36E-12
RA-228	1.69E-12
TH-228	1.17E-09
TH-230	1.40E-09
TH-232	7.37E-11
TH-234	8.80E-11
TOTAL	3.13E-08

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

Direction	Distance (m) 996	944	1689	1380	1126	1050	1255
N	8.8E-04	9.4E-04	4.3E-04	5.7E-04	7.5E-04	8.2E-04	6.5E-04
NNW	5.8E-04	6.3E-04	2.9E-04	3.8E-04	5.0E-04	5.5E-04	4.3E-04
NW	5.6E-04	6.0E-04	2.8E-04	3.7E-04	4.8E-04	5.3E-04	4.2E-04
WNW	6.0E-04	6.4E-04	3.0E-04	3.9E-04	5.1E-04	5.6E-04	4.5E-04
W	1.0E-03	1.1E-03	5.1E-04	6.7E-04	8.8E-04	9.7E-04	7.7E-04
WSW	1.2E-03	1.3E-03	5.5E-04	7.5E-04	1.0E-03	1.1E-03	8.7E-04
SW	6.9E-04	7.5E-04	3.2E-04	4.3E-04	5.8E-04	6.4E-04	5.0E-04
SSW	5.6E-04	6.0E-04	2.7E-04	3.6E-04	4.7E-04	5.2E-04	4.1E-04
S	6.0E-04	6.5E-04	3.0E-04	4.0E-04	5.2E-04	5.7E-04	4.5E-04
SSE	1.1E-03	1.1E-03	5.5E-04	7.2E-04	9.3E-04	1.0E-03	8.2E-04
SE	1.7E-03	1.8E-03	8.7E-04	1.1E-03	1.5E-03	1.6E-03	1.3E-03
ESE	1.8E-03	1.9E-03	9.2E-04	1.2E-03	1.6E-03	1.7E-03	1.4E-03
E	2.2E-03	2.4E-03	1.1E-03	1.5E-03	1.9E-03	2.1E-03	1.7E-03
ENE	2.3E-03	2.5E-03	1.1E-03	1.5E-03	2.0E-03	2.2E-03	1.7E-03
NE	2.1E-03	2.2E-03	1.0E-03	1.3E-03	1.8E-03	1.9E-03	1.5E-03
NNE	1.4E-03	1.5E-03	6.5E-04	8.7E-04	1.2E-03	1.3E-03	1.0E-03

Direction	Distance (m) 1350	1388	1548	1549	1578	1504	1502
N	5.9E-04	5.7E-04	4.9E-04	4.9E-04	4.8E-04	5.1E-04	5.1E-04
NNW	3.9E-04	3.8E-04	3.3E-04	3.3E-04	3.2E-04	3.4E-04	3.4E-04
NW	3.8E-04	3.7E-04	3.2E-04	3.2E-04	3.1E-04	3.3E-04	3.3E-04
WNW	4.1E-04	3.9E-04	3.4E-04	3.4E-04	3.3E-04	3.5E-04	3.5E-04
W	6.9E-04	6.7E-04	5.7E-04	5.7E-04	5.6E-04	6.0E-04	6.0E-04
WSW	7.8E-04	7.4E-04	6.3E-04	6.3E-04	6.1E-04	6.6E-04	6.6E-04
SW	4.5E-04	4.3E-04	3.6E-04	3.6E-04	3.5E-04	3.8E-04	3.8E-04
SSW	3.7E-04	3.5E-04	3.0E-04	3.0E-04	2.9E-04	3.1E-04	3.1E-04
S	4.1E-04	3.9E-04	3.4E-04	3.4E-04	3.3E-04	3.5E-04	3.5E-04
SSE	7.5E-04	7.2E-04	6.2E-04	6.2E-04	6.1E-04	6.5E-04	6.5E-04
SE	1.2E-03	1.1E-03	9.8E-04	9.8E-04	9.5E-04	1.0E-03	1.0E-03
ESE	1.3E-03	1.2E-03	1.0E-03	1.0E-03	1.0E-03	1.1E-03	1.1E-03
E	1.5E-03	1.5E-03	1.3E-03	1.3E-03	1.2E-03	1.3E-03	1.3E-03
ENE	1.5E-03	1.5E-03	1.3E-03	1.3E-03	1.2E-03	1.3E-03	1.3E-03
NE	1.4E-03	1.3E-03	1.1E-03	1.1E-03	1.1E-03	1.2E-03	1.2E-03
NNE	9.0E-04	8.7E-04	7.4E-04	7.4E-04	7.2E-04	7.7E-04	7.7E-04

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	2105	1610	1326	1305	1633	1513
N	3.1E-04	4.6E-04	6.0E-04	6.2E-04	4.5E-04	5.0E-04
NNW	2.1E-04	3.1E-04	4.0E-04	4.1E-04	3.0E-04	3.4E-04
NW	2.1E-04	3.0E-04	3.9E-04	4.0E-04	3.0E-04	3.3E-04
WNW	2.2E-04	3.2E-04	4.2E-04	4.2E-04	3.1E-04	3.5E-04
W	3.6E-04	5.4E-04	7.1E-04	7.3E-04	5.3E-04	5.9E-04
WSW	3.9E-04	5.9E-04	8.0E-04	8.2E-04	5.8E-04	6.5E-04
SW	2.3E-04	3.4E-04	4.6E-04	4.7E-04	3.3E-04	3.8E-04
SSW	1.9E-04	2.8E-04	3.8E-04	3.8E-04	2.8E-04	3.1E-04
S	2.2E-04	3.2E-04	4.2E-04	4.3E-04	3.2E-04	3.5E-04
SSE	4.0E-04	5.9E-04	7.6E-04	7.8E-04	5.8E-04	6.4E-04
SE	6.3E-04	9.3E-04	1.2E-03	1.2E-03	9.1E-04	1.0E-03
ESE	6.7E-04	9.8E-04	1.3E-03	1.3E-03	9.7E-04	1.1E-03
E	8.0E-04	1.2E-03	1.6E-03	1.6E-03	1.2E-03	1.3E-03
ENE	8.2E-04	1.2E-03	1.6E-03	1.6E-03	1.2E-03	1.3E-03
NE	7.2E-04	1.1E-03	1.4E-03	1.4E-03	1.1E-03	1.2E-03
NNE	4.7E-04	7.0E-04	9.3E-04	9.5E-04	6.8E-04	7.6E-04

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m) 996	944	1689	1380	1126	1050	1255
N	1.1E-08	1.2E-08	5.4E-09	7.2E-09	9.4E-09	1.0E-08	8.2E-09
NNW	7.3E-09	7.9E-09	3.5E-09	4.7E-09	6.2E-09	6.8E-09	5.4E-09
NW	7.1E-09	7.6E-09	3.5E-09	4.6E-09	6.0E-09	6.6E-09	5.2E-09
WNW	7.5E-09	8.0E-09	3.7E-09	4.9E-09	6.4E-09	7.0E-09	5.6E-09
W	1.3E-08	1.4E-08	6.3E-09	8.5E-09	1.1E-08	1.2E-08	9.7E-09
WSW	1.5E-08	1.7E-08	6.9E-09	9.4E-09	1.3E-08	1.4E-08	1.1E-08
SW	8.7E-09	9.5E-09	3.9E-09	5.4E-09	7.3E-09	8.1E-09	6.2E-09
SSW	6.9E-09	7.5E-09	3.2E-09	4.4E-09	5.9E-09	6.5E-09	5.0E-09
S	7.6E-09	8.1E-09	3.7E-09	4.9E-09	6.5E-09	7.1E-09	5.6E-09
SSE	1.4E-08	1.4E-08	6.9E-09	9.1E-09	1.2E-08	1.3E-08	1.0E-08
SE	2.1E-08	2.3E-08	1.1E-08	1.4E-08	1.9E-08	2.0E-08	1.6E-08
ESE	2.3E-08	2.4E-08	1.2E-08	1.5E-08	2.0E-08	2.2E-08	1.7E-08
E	2.8E-08	3.0E-08	1.4E-08	1.9E-08	2.4E-08	2.7E-08	2.1E-08
ENE	2.9E-08	3.1E-08	1.4E-08	1.9E-08	2.5E-08	2.7E-08	2.2E-08
NE	2.6E-08	2.8E-08	1.3E-08	1.7E-08	2.2E-08	2.4E-08	1.9E-08
NNE	1.7E-08	1.9E-08	8.2E-09	1.1E-08	1.5E-08	1.6E-08	1.3E-08

Direction	Distance (m) 1350	1388	1548	1549	1578	1504	1502
N	7.4E-09	7.1E-09	6.1E-09	6.1E-09	5.9E-09	6.3E-09	6.4E-09
NNW	4.9E-09	4.7E-09	4.0E-09	4.0E-09	3.9E-09	4.2E-09	4.2E-09
NW	4.7E-09	4.6E-09	3.9E-09	3.9E-09	3.8E-09	4.1E-09	4.1E-09
WNW	5.0E-09	4.8E-09	4.2E-09	4.2E-09	4.1E-09	4.3E-09	4.3E-09
W	8.7E-09	8.4E-09	7.2E-09	7.2E-09	7.0E-09	7.5E-09	7.5E-09
WSW	9.8E-09	9.4E-09	7.9E-09	7.9E-09	7.7E-09	8.3E-09	8.3E-09
SW	5.5E-09	5.3E-09	4.5E-09	4.5E-09	4.4E-09	4.7E-09	4.7E-09
SSW	4.5E-09	4.4E-09	3.7E-09	3.7E-09	3.6E-09	3.9E-09	3.9E-09
S	5.1E-09	4.9E-09	4.2E-09	4.2E-09	4.1E-09	4.4E-09	4.4E-09
SSE	9.4E-09	9.0E-09	7.8E-09	7.8E-09	7.6E-09	8.1E-09	8.1E-09
SE	1.5E-08	1.4E-08	1.2E-08	1.2E-08	1.2E-08	1.3E-08	1.3E-08
ESE	1.6E-08	1.5E-08	1.3E-08	1.3E-08	1.3E-08	1.4E-08	1.4E-08
E	1.9E-08	1.9E-08	1.6E-08	1.6E-08	1.5E-08	1.7E-08	1.7E-08
ENE	2.0E-08	1.9E-08	1.6E-08	1.6E-08	1.6E-08	1.7E-08	1.7E-08
NE	1.7E-08	1.7E-08	1.4E-08	1.4E-08	1.4E-08	1.5E-08	1.5E-08
NNE	1.1E-08	1.1E-08	9.3E-09	9.3E-09	9.0E-09	9.7E-09	9.7E-09

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	2105	1610	1326	1305	1633	1513
N	3.9E-09	5.8E-09	7.6E-09	7.7E-09	5.6E-09	6.3E-09
NNW	2.6E-09	3.8E-09	5.0E-09	5.1E-09	3.7E-09	4.1E-09
NW	2.5E-09	3.7E-09	4.9E-09	5.0E-09	3.6E-09	4.0E-09
WNW	2.7E-09	3.9E-09	5.2E-09	5.3E-09	3.9E-09	4.3E-09
W	4.5E-09	6.8E-09	9.0E-09	9.2E-09	6.6E-09	7.4E-09
WSW	4.9E-09	7.4E-09	1.0E-08	1.0E-08	7.3E-09	8.2E-09
SW	2.8E-09	4.2E-09	5.7E-09	5.8E-09	4.1E-09	4.6E-09
SSW	2.3E-09	3.5E-09	4.7E-09	4.8E-09	3.4E-09	3.8E-09
S	2.7E-09	4.0E-09	5.2E-09	5.3E-09	3.9E-09	4.3E-09
SSE	5.0E-09	7.4E-09	9.6E-09	9.8E-09	7.2E-09	8.0E-09
SE	7.9E-09	1.2E-08	1.5E-08	1.5E-08	1.1E-08	1.3E-08
ESE	8.3E-09	1.2E-08	1.6E-08	1.7E-08	1.2E-08	1.4E-08
E	1.0E-08	1.5E-08	2.0E-08	2.0E-08	1.5E-08	1.6E-08
ENE	1.0E-08	1.5E-08	2.0E-08	2.1E-08	1.5E-08	1.7E-08
NE	9.1E-09	1.4E-08	1.8E-08	1.8E-08	1.3E-08	1.5E-08
NNE	5.8E-09	8.8E-09	1.2E-08	1.2E-08	8.6E-09	9.6E-09

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Apr 27, 1998 8:51 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

2.18E-03

At This Location: 1035 Meters East Northeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Building 71 - Vent [G2]

Dataset Name: 97-Z026-VENT-G2
Dataset Date: Apr 27, 1998 8:49 am
Wind File: WNDFILES\97STAR.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 1035 Meters East Northeast
Lifetime Fatal Cancer Risk: 2.78E-08

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	6.62E-06
BREAST	7.54E-06
R MAR	2.95E-04
LUNGS	1.65E-02
THYROID	6.44E-06
ENDOST	3.89E-03
RMNDR	1.69E-04
EFFEC	2.18E-03

Apr 27, 1998 8:51 am

RADIONUCLIDE EMISSIONS DURING THE YEAR 1997

Nuclide	Class	Size	Source #1 Ci/y	Source #2 Ci/y	TOTAL Ci/y
U-234	Y	1.00	2.4E-06	2.9E-06	5.3E-06
U-235	Y	1.00	1.3E-07	1.5E-07	2.8E-07
U-236	Y	1.00	9.3E-08	1.1E-07	2.0E-07
U-238	Y	1.00	2.7E-06	3.2E-06	5.9E-06
RA-226	W	1.00	1.7E-09	2.0E-09	3.7E-09
RA-228	W	1.00	6.8E-09	8.2E-09	1.5E-08
TH-228	Y	1.00	7.2E-08	8.6E-08	1.6E-07
TH-230	Y	1.00	2.1E-07	2.5E-07	4.6E-07
TH-232	Y	1.00	1.1E-08	1.4E-08	2.5E-08
TH-234	Y	1.00	1.1E-05	1.3E-05	2.3E-05

SITE INFORMATION

Temperature:	11 degrees C
Precipitation:	102 cm/y
Mixing Height:	950 m

SOURCE INFORMATION

Source Number:	1	2
Stack Height (m):	4.60	2.00
Diameter (m):	0.46	1.67
Plume Rise Momentum (m/s): (Exit Velocity)	2.08E+00	9.31E+00

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

1035	1271	1915	1960	2555	2274	2511	1365	1683	2311
2370	1433	2333	1409	1681	1774	1730	1962	1990	1615

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Apr 27, 1998 8:51 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Building 71 - Vent [G2]

Dataset Name: 97-Z026-VENT-G2
Dataset Date: Apr 27, 1998 8:49 am
Wind File: WNDFILES\97STAR.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	6.62E-06
BREAST	7.54E-06
R MAR	2.95E-04
LUNGS	1.65E-02
THYROID	6.44E-06
ENDOST	3.89E-03
RMNDR	1.69E-04
EFFEC	2.18E-03

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	1.21E-04
INHALATION	2.06E-03
AIR IMMERSION	1.73E-10
GROUND SURFACE	1.32E-06
INTERNAL	2.18E-03
EXTERNAL	1.32E-06
TOTAL	2.18E-03

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	9.45E-04
U-235	4.74E-05
U-236	3.47E-05
U-238	9.40E-04
RA-226	9.09E-08
RA-228	1.45E-07
TH-228	5.17E-05
TH-230	1.52E-04
TH-232	1.16E-05
TH-234	2.46E-06
TOTAL	2.18E-03

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	2.89E-10
BONE	1.91E-10
THYROID	1.48E-12
BREAST	1.68E-11
LUNG	2.69E-08
STOMACH	1.12E-11
BOWEL	2.95E-11
LIVER	1.36E-11
PANCREAS	6.50E-12
URINARY	3.52E-10
OTHER	7.94E-12
TOTAL	2.78E-08

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	6.44E-10
INHALATION	2.71E-08
AIR IMMERSION	3.86E-15
GROUND SURFACE	3.04E-11
INTERNAL	2.78E-08
EXTERNAL	3.04E-11
TOTAL	2.78E-08

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	1.21E-08
U-235	6.22E-10
U-236	4.46E-10
U-238	1.22E-08
RA-226	1.21E-12
RA-228	1.49E-12
TH-228	1.04E-09
TH-230	1.24E-09
TH-232	6.55E-11
TH-234	7.79E-11
TOTAL	2.78E-08

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	1035	1271	1915	1960	2555	2274	2511
N	8.3E-04	6.3E-04	3.6E-04	3.4E-04	2.3E-04	2.8E-04	2.4E-04
NNW	5.5E-04	4.2E-04	2.4E-04	2.3E-04	1.6E-04	1.8E-04	1.6E-04
NW	5.3E-04	4.1E-04	2.3E-04	2.2E-04	1.5E-04	1.8E-04	1.6E-04
WNW	5.6E-04	4.3E-04	2.5E-04	2.4E-04	1.6E-04	1.9E-04	1.7E-04
W	9.8E-04	7.5E-04	4.1E-04	4.0E-04	2.7E-04	3.2E-04	2.8E-04
WSW	1.1E-03	8.4E-04	4.5E-04	4.3E-04	2.9E-04	3.4E-04	2.9E-04
SW	6.5E-04	4.8E-04	2.6E-04	2.5E-04	1.7E-04	2.0E-04	1.7E-04
SSW	5.2E-04	3.9E-04	2.2E-04	2.1E-04	1.4E-04	1.7E-04	1.4E-04
S	5.7E-04	4.4E-04	2.5E-04	2.4E-04	1.6E-04	1.9E-04	1.7E-04
SSE	1.0E-03	8.0E-04	4.5E-04	4.4E-04	3.0E-04	3.5E-04	3.1E-04
SE	1.6E-03	1.3E-03	7.2E-04	6.9E-04	4.7E-04	5.6E-04	4.8E-04
ESE	1.7E-03	1.3E-03	7.6E-04	7.3E-04	4.9E-04	5.9E-04	5.1E-04
E	2.1E-03	1.6E-03	9.2E-04	8.9E-04	6.0E-04	7.1E-04	6.1E-04
ENE	2.2E-03	1.7E-03	9.4E-04	9.0E-04	6.1E-04	7.2E-04	6.2E-04
NE	2.0E-03	1.5E-03	8.3E-04	8.0E-04	5.3E-04	6.4E-04	5.5E-04
NNE	1.3E-03	9.8E-04	5.3E-04	5.1E-04	3.4E-04	4.1E-04	3.5E-04

	Distance (m)						
Direction	1365	1683	2311	2370	1433	2333	1409
N	5.8E-04	4.3E-04	2.7E-04	2.6E-04	5.4E-04	2.7E-04	5.5E-04
NNW	3.8E-04	2.8E-04	1.8E-04	1.7E-04	3.6E-04	1.8E-04	3.7E-04
NW	3.7E-04	2.8E-04	1.8E-04	1.7E-04	3.5E-04	1.8E-04	3.6E-04
WNW	3.9E-04	3.0E-04	1.9E-04	1.8E-04	3.7E-04	1.9E-04	3.8E-04
W	6.8E-04	5.0E-04	3.1E-04	3.0E-04	6.3E-04	3.1E-04	6.5E-04
WSW	7.6E-04	5.5E-04	3.4E-04	3.2E-04	7.0E-04	3.3E-04	7.2E-04
SW	4.3E-04	3.1E-04	1.9E-04	1.9E-04	4.0E-04	1.9E-04	4.1E-04
SSW	3.6E-04	2.6E-04	1.6E-04	1.6E-04	3.3E-04	1.6E-04	3.4E-04
S	4.0E-04	3.0E-04	1.9E-04	1.8E-04	3.7E-04	1.8E-04	3.8E-04
SSE	7.3E-04	5.5E-04	3.5E-04	3.3E-04	6.8E-04	3.4E-04	7.0E-04
SE	1.2E-03	8.6E-04	5.4E-04	5.2E-04	1.1E-03	5.3E-04	1.1E-03
ESE	1.2E-03	9.2E-04	5.8E-04	5.5E-04	1.1E-03	5.7E-04	1.2E-03
E	1.5E-03	1.1E-03	7.0E-04	6.7E-04	1.4E-03	6.9E-04	1.4E-03
ENE	1.5E-03	1.1E-03	7.1E-04	6.8E-04	1.4E-03	7.0E-04	1.5E-03
NE	1.4E-03	1.0E-03	6.2E-04	6.0E-04	1.3E-03	6.1E-04	1.3E-03
NNE	8.8E-04	6.5E-04	4.0E-04	3.9E-04	8.2E-04	4.0E-04	8.4E-04

000412

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1681	1774	1730	1962	1990	1615
N	4.3E-04	4.0E-04	4.1E-04	3.4E-04	3.4E-04	4.5E-04
NNW	2.9E-04	2.6E-04	2.7E-04	2.3E-04	2.2E-04	3.0E-04
NW	2.8E-04	2.6E-04	2.7E-04	2.2E-04	2.2E-04	3.0E-04
WNW	3.0E-04	2.7E-04	2.8E-04	2.4E-04	2.3E-04	3.1E-04
W	5.0E-04	4.7E-04	4.8E-04	4.0E-04	3.9E-04	5.3E-04
WSW	5.5E-04	5.1E-04	5.3E-04	4.3E-04	4.2E-04	5.9E-04
SW	3.2E-04	2.9E-04	3.0E-04	2.5E-04	2.4E-04	3.4E-04
SSW	2.6E-04	2.4E-04	2.5E-04	2.1E-04	2.0E-04	2.8E-04
S	3.0E-04	2.8E-04	2.9E-04	2.4E-04	2.3E-04	3.1E-04
SSE	5.5E-04	5.1E-04	5.3E-04	4.4E-04	4.3E-04	5.8E-04
SE	8.7E-04	8.0E-04	8.3E-04	6.9E-04	6.7E-04	9.2E-04
ESE	9.2E-04	8.5E-04	8.8E-04	7.3E-04	7.2E-04	9.7E-04
E	1.1E-03	1.0E-03	1.1E-03	8.9E-04	8.7E-04	1.2E-03
ENE	1.1E-03	1.0E-03	1.1E-03	9.0E-04	8.8E-04	1.2E-03
NE	1.0E-03	9.3E-04	9.6E-04	8.0E-04	7.8E-04	1.1E-03
NNE	6.5E-04	6.0E-04	6.2E-04	5.1E-04	5.0E-04	6.9E-04

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	1035	1271	1915	1960	2555	2274	2511
N	1.1E-08	8.0E-09	4.4E-09	4.3E-09	2.9E-09	3.4E-09	2.9E-09
NNW	6.9E-09	5.3E-09	2.9E-09	2.8E-09	1.9E-09	2.3E-09	1.9E-09
NW	6.7E-09	5.1E-09	2.9E-09	2.8E-09	1.9E-09	2.2E-09	1.9E-09
WNW	7.1E-09	5.4E-09	3.0E-09	2.9E-09	2.0E-09	2.4E-09	2.0E-09
W	1.2E-08	9.5E-09	5.2E-09	5.0E-09	3.3E-09	4.0E-09	3.4E-09
WSW	1.4E-08	1.1E-08	5.6E-09	5.4E-09	3.6E-09	4.3E-09	3.7E-09
SW	8.2E-09	6.0E-09	3.2E-09	3.1E-09	2.0E-09	2.4E-09	2.1E-09
SSW	6.6E-09	4.9E-09	2.6E-09	2.6E-09	1.7E-09	2.0E-09	1.7E-09
S	7.2E-09	5.5E-09	3.0E-09	2.9E-09	2.0E-09	2.3E-09	2.0E-09
SSE	1.3E-08	1.0E-08	5.7E-09	5.5E-09	3.7E-09	4.4E-09	3.8E-09
SE	2.0E-08	1.6E-08	9.0E-09	8.7E-09	5.8E-09	7.0E-09	6.0E-09
ESE	2.2E-08	1.7E-08	9.6E-09	9.3E-09	6.2E-09	7.4E-09	6.4E-09
E	2.7E-08	2.1E-08	1.2E-08	1.1E-08	7.5E-09	9.0E-09	7.7E-09
ENE	2.8E-08	2.1E-08	1.2E-08	1.1E-08	7.6E-09	9.1E-09	7.8E-09
NE	2.5E-08	1.9E-08	1.0E-08	1.0E-08	6.7E-09	8.0E-09	6.9E-09
NNE	1.6E-08	1.2E-08	6.7E-09	6.5E-09	4.3E-09	5.1E-09	4.4E-09

	Distance (m)						
Direction	1365	1683	2311	2370	1433	2333	1409
N	7.2E-09	5.4E-09	3.3E-09	3.2E-09	6.8E-09	3.3E-09	6.9E-09
NNW	4.8E-09	3.5E-09	2.2E-09	2.1E-09	4.5E-09	2.2E-09	4.6E-09
NW	4.6E-09	3.5E-09	2.2E-09	2.1E-09	4.3E-09	2.1E-09	4.4E-09
WNW	4.9E-09	3.7E-09	2.3E-09	2.2E-09	4.6E-09	2.3E-09	4.7E-09
W	8.6E-09	6.3E-09	3.9E-09	3.7E-09	8.0E-09	3.8E-09	8.2E-09
WSW	9.6E-09	6.9E-09	4.2E-09	4.0E-09	8.9E-09	4.1E-09	9.1E-09
SW	5.4E-09	3.9E-09	2.4E-09	2.3E-09	5.0E-09	2.3E-09	5.2E-09
SSW	4.4E-09	3.2E-09	2.0E-09	1.9E-09	4.1E-09	1.9E-09	4.2E-09
S	5.0E-09	3.7E-09	2.3E-09	2.2E-09	4.6E-09	2.3E-09	4.8E-09
SSE	9.2E-09	6.9E-09	4.3E-09	4.1E-09	8.6E-09	4.2E-09	8.8E-09
SE	1.5E-08	1.1E-08	6.8E-09	6.6E-09	1.4E-08	6.7E-09	1.4E-08
ESE	1.6E-08	1.2E-08	7.2E-09	7.0E-09	1.5E-08	7.1E-09	1.5E-08
E	1.9E-08	1.4E-08	8.8E-09	8.4E-09	1.8E-08	8.6E-09	1.8E-08
ENE	1.9E-08	1.4E-08	8.9E-09	8.6E-09	1.8E-08	8.8E-09	1.8E-08
NE	1.7E-08	1.3E-08	7.9E-09	7.6E-09	1.6E-08	7.7E-09	1.6E-08
NNE	1.1E-08	8.2E-09	5.0E-09	4.8E-09	1.0E-08	4.9E-09	1.1E-08

000414

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1681	1774	1730	1962	1990	1615
N	5.4E-09	5.0E-09	5.2E-09	4.3E-09	4.2E-09	5.7E-09
NNW	3.5E-09	3.3E-09	3.4E-09	2.8E-09	2.7E-09	3.8E-09
NW	3.5E-09	3.2E-09	3.3E-09	2.8E-09	2.7E-09	3.7E-09
WNW	3.7E-09	3.4E-09	3.5E-09	2.9E-09	2.9E-09	3.9E-09
W	6.3E-09	5.8E-09	6.1E-09	5.0E-09	4.9E-09	6.7E-09
WSW	6.9E-09	6.4E-09	6.6E-09	5.4E-09	5.3E-09	7.4E-09
SW	3.9E-09	3.6E-09	3.7E-09	3.1E-09	3.0E-09	4.2E-09
SSW	3.2E-09	3.0E-09	3.1E-09	2.5E-09	2.5E-09	3.4E-09
S	3.7E-09	3.4E-09	3.5E-09	2.9E-09	2.9E-09	3.9E-09
SSE	6.9E-09	6.4E-09	6.6E-09	5.5E-09	5.4E-09	7.3E-09
SE	1.1E-08	1.0E-08	1.1E-08	8.7E-09	8.5E-09	1.2E-08
ESE	1.2E-08	1.1E-08	1.1E-08	9.2E-09	9.0E-09	1.2E-08
E	1.4E-08	1.3E-08	1.4E-08	1.1E-08	1.1E-08	1.5E-08
ENE	1.4E-08	1.3E-08	1.4E-08	1.1E-08	1.1E-08	1.5E-08
NE	1.3E-08	1.2E-08	1.2E-08	1.0E-08	9.8E-09	1.3E-08
NNE	8.2E-09	7.6E-09	7.9E-09	6.5E-09	6.3E-09	8.7E-09

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
May 8, 1998 2:23 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

1.35E-03

At This Location: 931 Meters East Northeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Building 78 Vents [G1]

Dataset Name: 97-Z030-VENT-G1
Dataset Date: May 8, 1998 2:21 pm
Wind File: WNDFILES\97STAR.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 931 Meters East Northeast
Lifetime Fatal Cancer Risk: 1.74E-08

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	2.86E-06
BREAST	3.24E-06
R MAR	1.53E-04
LUNGS	1.04E-02
THYROID	2.80E-06
ENDOST	2.00E-03
RMNDR	7.11E-05
EFFEC	1.35E-03

RADIONUCLIDE EMISSIONS DURING THE YEAR 1997

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	0.30	2.6E-06	2.6E-06
U-235	Y	1.00	1.4E-07	1.4E-07
U-236	Y	1.00	1.0E-07	1.0E-07
U-238	Y	0.30	2.9E-06	2.9E-06
RA-226	W	0.30	1.9E-09	1.9E-09
RA-228	W	0.30	7.5E-09	7.5E-09
TH-228	Y	0.30	7.9E-08	7.9E-08
TH-230	Y	0.30	2.3E-07	2.3E-07
TH-232	Y	0.30	1.3E-08	1.3E-08
TH-234	Y	0.30	1.2E-05	1.2E-05

SITE INFORMATION

Temperature:	11 degrees C
Precipitation:	102 cm/y
Mixing Height:	950 m

SOURCE INFORMATION

Source Number:	1
Stack Height (m):	2.00
Diameter (m):	0.47
Plume Rise Momentum (m/s): (Exit Velocity)	2.56E+01

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

931	960	1953	1774	1573	1519	1640	1691	1722	1837
1824	1772	1604	1575	2052	1469	994	948	1162	1151

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
May 8, 1998 2:23 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Building 78 Vents [G1]

Dataset Name: 97-Z030-VENT-G1
Dataset Date: May 8, 1998 2:21 pm
Wind File: WNDFILES\97STAR.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	2.86E-06
BREAST	3.24E-06
R MAR	1.53E-04
LUNGS	1.04E-02
THYROID	2.80E-06
ENDOST	2.00E-03
RMNDR	7.11E-05
EFFEC	1.35E-03

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	5.03E-05
INHALATION	1.30E-03
AIR IMMERSION	6.41E-11
GROUND SURFACE	5.38E-07
INTERNAL	1.35E-03
EXTERNAL	5.38E-07
TOTAL	1.35E-03

May 8, 1998 2:23 pm

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	5.93E-04
U-235	1.78E-05
U-236	1.30E-05
U-238	5.90E-04
RA-226	4.53E-08
RA-228	6.70E-08
TH-228	3.29E-05
TH-230	9.43E-05
TH-232	7.32E-06
TH-234	1.17E-06
TOTAL	1.35E-03

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	1.45E-10
BONE	9.61E-11
THYROID	6.33E-13
BREAST	7.08E-12
LUNG	1.70E-08
STOMACH	4.76E-12
BOWEL	1.22E-11
LIVER	6.53E-12
PANCREAS	2.79E-12
URINARY	1.47E-10
OTHER	3.42E-12
TOTAL	1.74E-08

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	2.67E-10
INHALATION	1.71E-08
AIR IMMERSION	1.43E-15
GROUND SURFACE	1.24E-11
INTERNAL	1.74E-08
EXTERNAL	1.24E-11
TOTAL	1.74E-08

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	7.73E-09
U-235	2.33E-10
U-236	1.66E-10
U-238	7.75E-09
RA-226	7.07E-13
RA-228	7.67E-13
TH-228	6.64E-10
TH-230	7.91E-10
TH-232	4.17E-11
TH-234	4.55E-11
TOTAL	1.74E-08

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	931	960	1953	1774	1573	1519	1640
N	5.3E-04	5.1E-04	2.0E-04	2.3E-04	2.7E-04	2.8E-04	2.5E-04
NNW	3.6E-04	3.5E-04	1.4E-04	1.5E-04	1.8E-04	1.9E-04	1.7E-04
NW	3.2E-04	3.1E-04	1.3E-04	1.5E-04	1.7E-04	1.8E-04	1.6E-04
WNW	3.0E-04	2.9E-04	1.2E-04	1.4E-04	1.6E-04	1.7E-04	1.5E-04
W	6.4E-04	6.2E-04	2.2E-04	2.6E-04	3.1E-04	3.2E-04	2.9E-04
WSW	9.7E-04	9.3E-04	3.1E-04	3.6E-04	4.3E-04	4.6E-04	4.0E-04
SW	5.4E-04	5.1E-04	1.7E-04	1.9E-04	2.3E-04	2.5E-04	2.2E-04
SSW	4.0E-04	3.8E-04	1.3E-04	1.5E-04	1.8E-04	1.9E-04	1.7E-04
S	3.7E-04	3.5E-04	1.3E-04	1.5E-04	1.8E-04	1.9E-04	1.7E-04
SSE	5.1E-04	4.9E-04	2.0E-04	2.2E-04	2.6E-04	2.7E-04	2.5E-04
SE	7.1E-04	6.9E-04	2.7E-04	3.1E-04	3.6E-04	3.8E-04	3.5E-04
ESE	7.9E-04	7.5E-04	2.9E-04	3.3E-04	3.9E-04	4.1E-04	3.7E-04
E	1.1E-03	1.1E-03	4.3E-04	4.9E-04	5.7E-04	6.0E-04	5.4E-04
ENE	1.4E-03	1.3E-03	5.2E-04	5.9E-04	7.0E-04	7.3E-04	6.6E-04
NE	1.3E-03	1.2E-03	4.7E-04	5.4E-04	6.4E-04	6.7E-04	6.0E-04
NNE	9.4E-04	8.9E-04	3.2E-04	3.7E-04	4.4E-04	4.6E-04	4.1E-04

	Distance (m)						
Direction	1691	1722	1837	1824	1772	1604	1575
N	2.4E-04	2.4E-04	2.2E-04	2.2E-04	2.3E-04	2.6E-04	2.7E-04
NNW	1.7E-04	1.6E-04	1.5E-04	1.5E-04	1.5E-04	1.8E-04	1.8E-04
NW	1.5E-04	1.5E-04	1.4E-04	1.4E-04	1.5E-04	1.6E-04	1.7E-04
WNW	1.4E-04	1.4E-04	1.3E-04	1.3E-04	1.4E-04	1.5E-04	1.6E-04
W	2.7E-04	2.7E-04	2.4E-04	2.5E-04	2.6E-04	3.0E-04	3.0E-04
WSW	3.9E-04	3.7E-04	3.4E-04	3.4E-04	3.6E-04	4.2E-04	4.3E-04
SW	2.1E-04	2.0E-04	1.8E-04	1.9E-04	1.9E-04	2.3E-04	2.3E-04
SSW	1.6E-04	1.6E-04	1.4E-04	1.4E-04	1.5E-04	1.7E-04	1.8E-04
S	1.6E-04	1.6E-04	1.4E-04	1.5E-04	1.5E-04	1.7E-04	1.8E-04
SSE	2.4E-04	2.3E-04	2.1E-04	2.2E-04	2.2E-04	2.6E-04	2.6E-04
SE	3.3E-04	3.2E-04	3.0E-04	3.0E-04	3.1E-04	3.6E-04	3.6E-04
ESE	3.5E-04	3.4E-04	3.2E-04	3.2E-04	3.3E-04	3.8E-04	3.9E-04
E	5.2E-04	5.1E-04	4.7E-04	4.7E-04	4.9E-04	5.6E-04	5.7E-04
ENE	6.3E-04	6.2E-04	5.6E-04	5.7E-04	5.9E-04	6.8E-04	7.0E-04
NE	5.8E-04	5.6E-04	5.1E-04	5.2E-04	5.4E-04	6.2E-04	6.4E-04
NNE	4.0E-04	3.9E-04	3.5E-04	3.5E-04	3.7E-04	4.3E-04	4.4E-04

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INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	2052	1469	994	948	1162	1151
N	1.9E-04	2.9E-04	4.9E-04	5.2E-04	4.0E-04	4.0E-04
NNW	1.3E-04	2.0E-04	3.3E-04	3.6E-04	2.7E-04	2.8E-04
NW	1.2E-04	1.8E-04	2.9E-04	3.1E-04	2.5E-04	2.5E-04
WNW	1.1E-04	1.7E-04	2.8E-04	3.0E-04	2.3E-04	2.3E-04
W	2.1E-04	3.4E-04	5.9E-04	6.3E-04	4.7E-04	4.8E-04
WSW	2.9E-04	4.8E-04	8.8E-04	9.5E-04	6.9E-04	7.0E-04
SW	1.5E-04	2.6E-04	4.8E-04	5.3E-04	3.8E-04	3.8E-04
SSW	1.2E-04	2.0E-04	3.6E-04	3.8E-04	2.8E-04	2.9E-04
S	1.2E-04	2.0E-04	3.4E-04	3.6E-04	2.7E-04	2.8E-04
SSE	1.9E-04	2.9E-04	4.7E-04	5.0E-04	3.9E-04	3.9E-04
SE	2.6E-04	4.0E-04	6.6E-04	7.0E-04	5.4E-04	5.5E-04
ESE	2.7E-04	4.3E-04	7.2E-04	7.7E-04	5.8E-04	5.9E-04
E	4.0E-04	6.3E-04	1.0E-03	1.1E-03	8.5E-04	8.6E-04
ENE	4.9E-04	7.6E-04	1.2E-03	1.3E-03	1.0E-03	1.0E-03
NE	4.4E-04	7.0E-04	1.2E-03	1.3E-03	9.6E-04	9.7E-04
NNE	3.0E-04	4.9E-04	8.5E-04	9.1E-04	6.8E-04	6.9E-04

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m) 931	960	1953	1774	1573	1519	1640
N	6.8E-09	6.6E-09	2.5E-09	2.9E-09	3.4E-09	3.6E-09	3.2E-09
NNW	4.7E-09	4.5E-09	1.7E-09	2.0E-09	2.3E-09	2.4E-09	2.2E-09
NW	4.1E-09	3.9E-09	1.6E-09	1.8E-09	2.1E-09	2.2E-09	2.0E-09
WNW	3.9E-09	3.7E-09	1.5E-09	1.7E-09	2.0E-09	2.1E-09	1.9E-09
W	8.3E-09	7.9E-09	2.8E-09	3.3E-09	3.9E-09	4.1E-09	3.7E-09
WSW	1.3E-08	1.2E-08	3.9E-09	4.6E-09	5.5E-09	5.9E-09	5.2E-09
SW	7.0E-09	6.6E-09	2.1E-09	2.5E-09	3.0E-09	3.1E-09	2.8E-09
SSW	5.1E-09	4.8E-09	1.6E-09	1.9E-09	2.3E-09	2.4E-09	2.1E-09
S	4.7E-09	4.5E-09	1.7E-09	1.9E-09	2.3E-09	2.4E-09	2.1E-09
SSE	6.5E-09	6.3E-09	2.5E-09	2.8E-09	3.3E-09	3.5E-09	3.2E-09
SE	9.2E-09	8.8E-09	3.5E-09	4.0E-09	4.7E-09	4.9E-09	4.4E-09
ESE	1.0E-08	9.7E-09	3.7E-09	4.2E-09	5.0E-09	5.2E-09	4.7E-09
E	1.5E-08	1.4E-08	5.5E-09	6.3E-09	7.4E-09	7.7E-09	7.0E-09
ENE	1.7E-08	1.7E-08	6.7E-09	7.6E-09	9.0E-09	9.4E-09	8.5E-09
NE	1.7E-08	1.6E-08	6.0E-09	6.9E-09	8.2E-09	8.6E-09	7.7E-09
NNE	1.2E-08	1.2E-08	4.1E-09	4.7E-09	5.7E-09	5.9E-09	5.3E-09

Direction	Distance (m) 1691	1722	1837	1824	1772	1604	1575
N	3.1E-09	3.0E-09	2.7E-09	2.8E-09	2.9E-09	3.3E-09	3.4E-09
NNW	2.1E-09	2.0E-09	1.9E-09	1.9E-09	2.0E-09	2.2E-09	2.3E-09
NW	1.9E-09	1.9E-09	1.7E-09	1.8E-09	1.8E-09	2.1E-09	2.1E-09
WNW	1.8E-09	1.8E-09	1.6E-09	1.6E-09	1.7E-09	1.9E-09	2.0E-09
W	3.5E-09	3.4E-09	3.1E-09	3.1E-09	3.3E-09	3.8E-09	3.9E-09
WSW	4.9E-09	4.8E-09	4.3E-09	4.4E-09	4.6E-09	5.4E-09	5.5E-09
SW	2.6E-09	2.6E-09	2.3E-09	2.3E-09	2.5E-09	2.9E-09	3.0E-09
SSW	2.0E-09	2.0E-09	1.8E-09	1.8E-09	1.9E-09	2.2E-09	2.3E-09
S	2.0E-09	2.0E-09	1.8E-09	1.8E-09	1.9E-09	2.2E-09	2.3E-09
SSE	3.0E-09	3.0E-09	2.7E-09	2.7E-09	2.8E-09	3.3E-09	3.3E-09
SE	4.2E-09	4.1E-09	3.8E-09	3.8E-09	4.0E-09	4.5E-09	4.7E-09
ESE	4.5E-09	4.4E-09	4.0E-09	4.1E-09	4.2E-09	4.8E-09	5.0E-09
E	6.7E-09	6.5E-09	6.0E-09	6.0E-09	6.3E-09	7.2E-09	7.4E-09
ENE	8.1E-09	7.9E-09	7.2E-09	7.3E-09	7.6E-09	8.7E-09	8.9E-09
NE	7.4E-09	7.2E-09	6.6E-09	6.6E-09	6.9E-09	8.0E-09	8.2E-09
NNE	5.1E-09	4.9E-09	4.5E-09	4.5E-09	4.7E-09	5.5E-09	5.6E-09

000427

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	2052	1469	994	948	1162	1151
N	2.3E-09	3.7E-09	6.3E-09	6.7E-09	5.1E-09	5.2E-09
NNW	1.6E-09	2.5E-09	4.3E-09	4.6E-09	3.5E-09	3.5E-09
NW	1.5E-09	2.3E-09	3.8E-09	4.0E-09	3.1E-09	3.2E-09
WNW	1.4E-09	2.2E-09	3.6E-09	3.8E-09	2.9E-09	3.0E-09
W	2.6E-09	4.3E-09	7.5E-09	8.1E-09	6.1E-09	6.1E-09
WSW	3.6E-09	6.2E-09	1.1E-08	1.2E-08	8.9E-09	9.0E-09
SW	1.9E-09	3.3E-09	6.2E-09	6.8E-09	4.9E-09	4.9E-09
SSW	1.5E-09	2.5E-09	4.6E-09	4.9E-09	3.6E-09	3.7E-09
S	1.5E-09	2.5E-09	4.3E-09	4.6E-09	3.5E-09	3.5E-09
SSE	2.3E-09	3.7E-09	6.0E-09	6.4E-09	5.0E-09	5.0E-09
SE	3.3E-09	5.1E-09	8.4E-09	9.0E-09	6.9E-09	7.0E-09
ESE	3.5E-09	5.5E-09	9.2E-09	9.9E-09	7.5E-09	7.6E-09
E	5.2E-09	8.1E-09	1.3E-08	1.4E-08	1.1E-08	1.1E-08
ENE	6.2E-09	9.8E-09	1.6E-08	1.7E-08	1.3E-08	1.3E-08
NE	5.6E-09	9.0E-09	1.5E-08	1.6E-08	1.2E-08	1.3E-08
NNE	3.8E-09	6.3E-09	1.1E-08	1.2E-08	8.8E-09	8.9E-09

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
May 8, 1998 2:24 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

1.54E-03

At This Location: 833 Meters East Northeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Building 78 Vents [G2]

Dataset Name: 97-Z030-VENT-G2
Dataset Date: May 8, 1998 2:22 pm
Wind File: WNDFILES\97STAR.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 833 Meters East Northeast
Lifetime Fatal Cancer Risk: 1.99E-08

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	3.17E-06
BREAST	3.60E-06
R MAR	1.72E-04
LUNGS	1.19E-02
THYROID	3.09E-06
ENDOST	2.24E-03
RMNDR	7.77E-05
EFFEC	1.54E-03

RADIONUCLIDE EMISSIONS DURING THE YEAR 1997

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	0.30	2.6E-06	2.6E-06
U-235	Y	1.00	1.4E-07	1.4E-07
U-236	Y	1.00	1.0E-07	1.0E-07
U-238	Y	0.30	2.9E-06	2.9E-06
RA-226	W	0.30	1.9E-09	1.9E-09
RA-228	W	0.30	7.5E-09	7.5E-09
TH-228	Y	0.30	7.9E-08	7.9E-08
TH-230	Y	0.30	2.3E-07	2.3E-07
TH-232	Y	0.30	1.3E-08	1.3E-08
TH-234	Y	0.30	1.2E-05	1.2E-05

SITE INFORMATION

Temperature: 11 degrees C
Precipitation: 102 cm/y
Mixing Height: 950 m

SOURCE INFORMATION

Source Number:	1
Stack Height (m):	2.00
Diameter (m):	0.47
Plume Rise Momentum (m/s): (Exit Velocity)	2.56E+01

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

833	1335	2386	1511	2064	2765	2292	1456	1499	1825
1883	1534	2824	1794	1961	2056	2022	2408	2439	1278

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
May 8, 1998 2:24 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
Building 78 Vents [G2]

Dataset Name: 97-Z030-VENT-G2
Dataset Date: May 8, 1998 2:22 pm
Wind File: WNDFILES\97STAR.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	3.17E-06
BREAST	3.60E-06
R MAR	1.72E-04
LUNGS	1.19E-02
THYROID	3.09E-06
ENDOST	2.24E-03
RMNDR	7.77E-05
EFFEC	1.54E-03

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	5.47E-05
INHALATION	1.48E-03
AIR IMMERSION	7.32E-11
GROUND SURFACE	6.11E-07
INTERNAL	1.54E-03
EXTERNAL	6.11E-07
TOTAL	1.54E-03

May 8, 1998 2:24 pm

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	6.76E-04
U-235	2.02E-05
U-236	1.48E-05
U-238	6.72E-04
RA-226	5.06E-08
RA-228	7.43E-08
TH-228	3.75E-05
TH-230	1.08E-04
TH-232	8.36E-06
TH-234	1.30E-06
TOTAL	1.54E-03

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	1.63E-10
BONE	1.08E-10
THYROID	7.04E-13
BREAST	7.92E-12
LUNG	1.94E-08
STOMACH	5.28E-12
BOWEL	1.35E-11
LIVER	7.33E-12
PANCREAS	3.10E-12
URINARY	1.61E-10
OTHER	3.79E-12
TOTAL	1.99E-08

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	2.90E-10
INHALATION	1.96E-08
AIR IMMERSION	1.63E-15
GROUND SURFACE	1.41E-11
INTERNAL	1.99E-08
EXTERNAL	1.41E-11
TOTAL	1.99E-08

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	8.81E-09
U-235	2.65E-10
U-236	1.90E-10
U-238	8.84E-09
RA-226	8.02E-13
RA-228	8.60E-13
TH-228	7.58E-10
TH-230	9.02E-10
TH-232	4.76E-11
TH-234	5.17E-11
TOTAL	1.99E-08

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	833	1335	2386	1511	2064	2765	2292
N	6.2E-04	3.3E-04	1.5E-04	2.8E-04	1.8E-04	1.2E-04	1.6E-04
NNW	4.2E-04	2.3E-04	1.0E-04	1.9E-04	1.2E-04	8.4E-05	1.1E-04
NW	3.6E-04	2.1E-04	9.8E-05	1.8E-04	1.2E-04	8.2E-05	1.0E-04
WNW	3.5E-04	1.9E-04	9.3E-05	1.6E-04	1.1E-04	7.8E-05	9.8E-05
W	7.5E-04	3.9E-04	1.7E-04	3.2E-04	2.0E-04	1.4E-04	1.8E-04
WSW	1.2E-03	5.6E-04	2.3E-04	4.6E-04	2.8E-04	1.8E-04	2.4E-04
SW	6.5E-04	3.0E-04	1.2E-04	2.5E-04	1.5E-04	9.8E-05	1.3E-04
SSW	4.7E-04	2.3E-04	9.5E-05	1.9E-04	1.2E-04	7.8E-05	1.0E-04
S	4.3E-04	2.2E-04	9.9E-05	1.9E-04	1.2E-04	8.1E-05	1.0E-04
SSE	5.7E-04	3.2E-04	1.5E-04	2.8E-04	1.8E-04	1.3E-04	1.6E-04
SE	8.2E-04	4.5E-04	2.1E-04	3.8E-04	2.5E-04	1.8E-04	2.2E-04
ESE	9.2E-04	4.8E-04	2.3E-04	4.1E-04	2.7E-04	1.9E-04	2.4E-04
E	1.3E-03	7.1E-04	3.3E-04	6.0E-04	4.0E-04	2.8E-04	3.5E-04
ENE	1.5E-03	8.6E-04	3.9E-04	7.3E-04	4.8E-04	3.2E-04	4.2E-04
NE	1.5E-03	8.0E-04	3.5E-04	6.7E-04	4.3E-04	2.9E-04	3.7E-04
NNE	1.1E-03	5.6E-04	2.4E-04	4.7E-04	2.9E-04	2.0E-04	2.5E-04

	Distance (m)						
Direction	1456	1499	1825	1883	1534	2824	1794
N	2.9E-04	2.8E-04	2.2E-04	2.1E-04	2.7E-04	1.2E-04	2.2E-04
NNW	2.0E-04	1.9E-04	1.5E-04	1.4E-04	1.9E-04	8.2E-05	1.5E-04
NW	1.8E-04	1.8E-04	1.4E-04	1.3E-04	1.7E-04	8.0E-05	1.4E-04
WNW	1.7E-04	1.7E-04	1.3E-04	1.2E-04	1.6E-04	7.6E-05	1.3E-04
W	3.4E-04	3.3E-04	2.4E-04	2.3E-04	3.2E-04	1.3E-04	2.5E-04
WSW	4.9E-04	4.6E-04	3.4E-04	3.2E-04	4.5E-04	1.8E-04	3.5E-04
SW	2.6E-04	2.5E-04	1.8E-04	1.7E-04	2.4E-04	9.5E-05	1.9E-04
SSW	2.0E-04	1.9E-04	1.4E-04	1.3E-04	1.8E-04	7.6E-05	1.4E-04
S	2.0E-04	1.9E-04	1.4E-04	1.4E-04	1.8E-04	7.9E-05	1.5E-04
SSE	2.9E-04	2.8E-04	2.1E-04	2.1E-04	2.7E-04	1.3E-04	2.2E-04
SE	4.0E-04	3.9E-04	3.0E-04	2.9E-04	3.8E-04	1.8E-04	3.1E-04
ESE	4.3E-04	4.1E-04	3.2E-04	3.0E-04	4.0E-04	1.9E-04	3.2E-04
E	6.3E-04	6.1E-04	4.7E-04	4.5E-04	5.9E-04	2.7E-04	4.8E-04
ENE	7.7E-04	7.4E-04	5.7E-04	5.4E-04	7.2E-04	3.2E-04	5.8E-04
NE	7.1E-04	6.8E-04	5.2E-04	4.9E-04	6.6E-04	2.8E-04	5.3E-04
NNE	4.9E-04	4.7E-04	3.5E-04	3.4E-04	4.6E-04	1.9E-04	3.6E-04

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INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1961	2056	2022	2408	2439	1278
N	2.0E-04	1.8E-04	1.9E-04	1.5E-04	1.5E-04	3.5E-04
NNW	1.3E-04	1.2E-04	1.3E-04	1.0E-04	9.9E-05	2.4E-04
NW	1.3E-04	1.2E-04	1.2E-04	9.7E-05	9.6E-05	2.2E-04
WNW	1.2E-04	1.1E-04	1.1E-04	9.2E-05	9.1E-05	2.0E-04
W	2.2E-04	2.1E-04	2.1E-04	1.6E-04	1.6E-04	4.1E-04
WSW	3.0E-04	2.8E-04	2.9E-04	2.2E-04	2.2E-04	6.0E-04
SW	1.6E-04	1.5E-04	1.6E-04	1.2E-04	1.2E-04	3.2E-04
SSW	1.3E-04	1.2E-04	1.2E-04	9.4E-05	9.2E-05	2.4E-04
S	1.3E-04	1.2E-04	1.2E-04	9.7E-05	9.6E-05	2.4E-04
SSE	1.9E-04	1.8E-04	1.9E-04	1.5E-04	1.5E-04	3.4E-04
SE	2.7E-04	2.6E-04	2.6E-04	2.1E-04	2.1E-04	4.8E-04
ESE	2.9E-04	2.7E-04	2.8E-04	2.2E-04	2.2E-04	5.1E-04
E	4.3E-04	4.0E-04	4.1E-04	3.3E-04	3.2E-04	7.5E-04
ENE	5.1E-04	4.8E-04	4.9E-04	3.9E-04	3.8E-04	9.1E-04
NE	4.7E-04	4.4E-04	4.5E-04	3.5E-04	3.4E-04	8.5E-04
NNE	3.2E-04	3.0E-04	3.0E-04	2.4E-04	2.3E-04	5.9E-04

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m) 833	1335	2386	1511	2064	2765	2292
N	7.9E-09	4.2E-09	1.9E-09	3.6E-09	2.3E-09	1.6E-09	2.0E-09
NNW	5.4E-09	2.9E-09	1.3E-09	2.4E-09	1.6E-09	1.0E-09	1.4E-09
NW	4.7E-09	2.6E-09	1.2E-09	2.2E-09	1.5E-09	1.0E-09	1.3E-09
WNW	4.5E-09	2.5E-09	1.2E-09	2.1E-09	1.4E-09	9.7E-10	1.2E-09
W	9.6E-09	5.0E-09	2.1E-09	4.1E-09	2.6E-09	1.7E-09	2.2E-09
WSW	1.5E-08	7.2E-09	2.9E-09	5.9E-09	3.6E-09	2.3E-09	3.1E-09
SW	8.4E-09	3.9E-09	1.5E-09	3.2E-09	1.9E-09	1.2E-09	1.6E-09
SSW	6.0E-09	2.9E-09	1.2E-09	2.4E-09	1.5E-09	9.7E-10	1.3E-09
S	5.5E-09	2.9E-09	1.2E-09	2.4E-09	1.5E-09	1.0E-09	1.3E-09
SSE	7.4E-09	4.1E-09	1.9E-09	3.5E-09	2.3E-09	1.6E-09	2.0E-09
SE	1.1E-08	5.8E-09	2.7E-09	4.9E-09	3.2E-09	2.3E-09	2.8E-09
ESE	1.2E-08	6.2E-09	2.9E-09	5.2E-09	3.4E-09	2.4E-09	3.0E-09
E	1.7E-08	9.1E-09	4.2E-09	7.8E-09	5.1E-09	3.5E-09	4.5E-09
ENE	2.0E-08	1.1E-08	5.1E-09	9.4E-09	6.2E-09	4.2E-09	5.3E-09
NE	1.9E-08	1.0E-08	4.5E-09	8.7E-09	5.6E-09	3.7E-09	4.8E-09
NNE	1.4E-08	7.2E-09	3.1E-09	6.0E-09	3.8E-09	2.5E-09	3.2E-09

Direction	Distance (m) 1456	1499	1825	1883	1534	2824	1794
N	3.8E-09	3.6E-09	2.8E-09	2.6E-09	3.5E-09	1.5E-09	2.8E-09
NNW	2.6E-09	2.5E-09	1.9E-09	1.8E-09	2.4E-09	1.0E-09	1.9E-09
NW	2.3E-09	2.3E-09	1.8E-09	1.7E-09	2.2E-09	9.9E-10	1.8E-09
WNW	2.2E-09	2.1E-09	1.6E-09	1.6E-09	2.1E-09	9.5E-10	1.7E-09
W	4.4E-09	4.2E-09	3.1E-09	3.0E-09	4.0E-09	1.7E-09	3.2E-09
WSW	6.2E-09	6.0E-09	4.4E-09	4.2E-09	5.8E-09	2.2E-09	4.5E-09
SW	3.4E-09	3.2E-09	2.3E-09	2.2E-09	3.1E-09	1.2E-09	2.4E-09
SSW	2.5E-09	2.4E-09	1.8E-09	1.7E-09	2.3E-09	9.4E-10	1.8E-09
S	2.5E-09	2.4E-09	1.8E-09	1.7E-09	2.3E-09	9.8E-10	1.9E-09
SSE	3.7E-09	3.6E-09	2.7E-09	2.6E-09	3.4E-09	1.6E-09	2.8E-09
SE	5.2E-09	5.0E-09	3.8E-09	3.7E-09	4.8E-09	2.3E-09	3.9E-09
ESE	5.5E-09	5.3E-09	4.1E-09	3.9E-09	5.1E-09	2.4E-09	4.1E-09
E	8.2E-09	7.9E-09	6.0E-09	5.8E-09	7.6E-09	3.4E-09	6.2E-09
ENE	9.9E-09	9.5E-09	7.3E-09	7.0E-09	9.3E-09	4.0E-09	7.5E-09
NE	9.1E-09	8.8E-09	6.6E-09	6.3E-09	8.5E-09	3.6E-09	6.8E-09
NNE	6.3E-09	6.1E-09	4.5E-09	4.3E-09	5.9E-09	2.4E-09	4.6E-09

000440

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1961	2056	2022	2408	2439	1278
N	2.5E-09	2.3E-09	2.4E-09	1.9E-09	1.8E-09	4.5E-09
NNW	1.7E-09	1.6E-09	1.6E-09	1.3E-09	1.2E-09	3.1E-09
NW	1.6E-09	1.5E-09	1.5E-09	1.2E-09	1.2E-09	2.8E-09
WNW	1.5E-09	1.4E-09	1.4E-09	1.1E-09	1.1E-09	2.6E-09
W	2.8E-09	2.6E-09	2.7E-09	2.1E-09	2.0E-09	5.3E-09
WSW	3.9E-09	3.6E-09	3.7E-09	2.8E-09	2.8E-09	7.7E-09
SW	2.1E-09	1.9E-09	2.0E-09	1.5E-09	1.5E-09	4.2E-09
SSW	1.6E-09	1.5E-09	1.5E-09	1.2E-09	1.2E-09	3.1E-09
S	1.6E-09	1.5E-09	1.6E-09	1.2E-09	1.2E-09	3.0E-09
SSE	2.5E-09	2.3E-09	2.4E-09	1.9E-09	1.9E-09	4.4E-09
SE	3.5E-09	3.3E-09	3.3E-09	2.7E-09	2.6E-09	6.1E-09
ESE	3.7E-09	3.5E-09	3.5E-09	2.8E-09	2.8E-09	6.6E-09
E	5.5E-09	5.1E-09	5.3E-09	4.2E-09	4.1E-09	9.7E-09
ENE	6.6E-09	6.2E-09	6.3E-09	5.0E-09	4.9E-09	1.2E-08
NE	6.0E-09	5.6E-09	5.7E-09	4.5E-09	4.4E-09	1.1E-08
NNE	4.1E-09	3.8E-09	3.9E-09	3.0E-09	3.0E-09	7.7E-09

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Apr 8, 1998 2:26 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

8.14E-03

At This Location: 641 Meters East

Source Category: REMEDIATION SITE
Source Type: Area
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
WASTE PIT 5 [G1]

Dataset Name: 97-Z016-G1
Dataset Date: Apr 8, 1998 2:20 pm
Wind File: WNDFILES\97STAR.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 641 Meters East
Lifetime Fatal Cancer Risk: 7.05E-08

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	2.66E-05
BREAST	2.79E-05
R MAR	7.39E-03
LUNGS	3.70E-02
THYROID	2.64E-05
ENDOST	9.20E-02
RMNDR	1.08E-04
EFFEC	8.14E-03

RADIONUCLIDE EMISSIONS DURING THE YEAR 1997

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	1.00	4.2E-07	4.2E-07
U-235	Y	1.00	1.7E-08	1.7E-08
U-236	Y	1.00	4.3E-08	4.3E-08
U-238	Y	1.00	3.1E-07	3.1E-07
RA-226	W	1.00	2.7E-07	2.7E-07
RA-228	W	1.00	3.4E-08	3.4E-08
TH-228	Y	1.00	4.3E-08	4.3E-08
TH-230	Y	1.00	4.9E-06	4.9E-06
TH-232	Y	1.00	3.4E-08	3.4E-08
TH-234	Y	1.00	3.2E-07	3.2E-07

SITE INFORMATION

Temperature: 11 degrees C
Precipitation: 102 cm/y
Mixing Height: 950 m

SOURCE INFORMATION

Source Number: 1

Source Height (m): 1.00
Area (sq m): 1.82E+03

Plume Rise
Momentum (m/s): 0.00E+00
(Exit Velocity)

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

915	789	1198	855	641	980	1372	1528	1572	1777
1795	1904	1907	1921	2571	2116	1849	1825	1948	1669

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Apr 8, 1998 2:26 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Area
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
WASTE PIT 5 [G1]

Dataset Name: 97-Z016-G1
Dataset Date: Apr 8, 1998 2:20 pm
Wind File: WNDFILES\97STAR.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	2.66E-05
BREAST	2.79E-05
R MAR	7.39E-03
LUNGS	3.70E-02
THYROID	2.64E-05
ENDOST	9.20E-02
RMNDR	1.08E-04
EFFEC	8.14E-03

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	1.35E-04
INHALATION	8.00E-03
AIR IMMERSION	3.25E-11
GROUND SURFACE	9.43E-07
INTERNAL	8.13E-03
EXTERNAL	9.43E-07
TOTAL	8.13E-03

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	3.45E-04
U-235	1.34E-05
U-236	3.36E-05
U-238	2.30E-04
RA-226	2.79E-05
RA-228	1.34E-06
TH-228	6.56E-05
TH-230	7.35E-03
TH-232	7.27E-05
TH-234	1.40E-07
TOTAL	8.13E-03

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	6.24E-09
BONE	4.10E-09
THYROID	4.47E-12
BREAST	4.22E-11
LUNG	5.97E-08
STOMACH	3.05E-11
BOWEL	3.16E-11
LIVER	1.92E-10
PANCREAS	2.18E-11
URINARY	1.04E-10
OTHER	2.67E-11
TOTAL	7.05E-08

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	5.19E-10
INHALATION	7.00E-08
AIR IMMERSION	7.37E-16
GROUND SURFACE	2.12E-11
INTERNAL	7.05E-08
EXTERNAL	2.12E-11
TOTAL	7.05E-08

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	4.46E-09
U-235	1.77E-10
U-236	4.35E-10
U-238	2.99E-09
RA-226	3.92E-10
RA-228	1.42E-11
TH-228	1.31E-09
TH-230	6.03E-08
TH-232	4.10E-10
TH-234	4.73E-12
TOTAL	7.05E-08

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	915	789	1198	855	641	980	1372
N	1.4E-03	1.8E-03	8.2E-04	1.6E-03	2.8E-03	1.2E-03	6.4E-04
NNW	8.7E-04	1.2E-03	5.3E-04	1.0E-03	1.8E-03	7.6E-04	4.1E-04
NW	8.9E-04	1.2E-03	5.4E-04	1.0E-03	1.8E-03	7.7E-04	4.2E-04
WNW	1.0E-03	1.4E-03	6.0E-04	1.2E-03	2.1E-03	8.7E-04	4.6E-04
W	1.6E-03	2.2E-03	9.7E-04	1.8E-03	3.3E-03	1.4E-03	7.5E-04
WSW	1.5E-03	2.0E-03	9.0E-04	1.7E-03	2.9E-03	1.3E-03	7.0E-04
SW	8.5E-04	1.1E-03	5.2E-04	9.7E-04	1.7E-03	7.5E-04	4.1E-04
SSW	7.5E-04	1.0E-03	4.6E-04	8.6E-04	1.5E-03	6.6E-04	3.6E-04
S	9.4E-04	1.3E-03	5.6E-04	1.1E-03	1.9E-03	8.2E-04	4.4E-04
SSE	2.0E-03	2.7E-03	1.2E-03	2.3E-03	4.1E-03	1.7E-03	9.0E-04
SE	3.3E-03	4.4E-03	1.9E-03	3.8E-03	6.8E-03	2.8E-03	1.5E-03
ESE	3.5E-03	4.7E-03	2.1E-03	4.0E-03	7.2E-03	3.0E-03	1.6E-03
E	3.9E-03	5.3E-03	2.3E-03	4.5E-03	8.1E-03	3.4E-03	1.8E-03
ENE	3.7E-03	5.0E-03	2.2E-03	4.3E-03	7.6E-03	3.2E-03	1.7E-03
NE	3.2E-03	4.3E-03	1.9E-03	3.7E-03	6.6E-03	2.8E-03	1.5E-03
NNE	2.0E-03	2.6E-03	1.2E-03	2.2E-03	4.0E-03	1.7E-03	9.2E-04

	Distance (m)						
Direction	1528	1572	1777	1795	1904	1907	1921
N	5.2E-04	4.9E-04	3.9E-04	3.9E-04	3.4E-04	3.4E-04	3.4E-04
NNW	3.3E-04	3.2E-04	2.5E-04	2.5E-04	2.2E-04	2.2E-04	2.2E-04
NW	3.4E-04	3.2E-04	2.6E-04	2.5E-04	2.3E-04	2.3E-04	2.2E-04
WNW	3.8E-04	3.6E-04	2.8E-04	2.8E-04	2.5E-04	2.5E-04	2.4E-04
W	6.1E-04	5.8E-04	4.6E-04	4.5E-04	4.0E-04	4.0E-04	3.9E-04
WSW	5.8E-04	5.5E-04	4.4E-04	4.4E-04	3.9E-04	3.9E-04	3.9E-04
SW	3.4E-04	3.2E-04	2.6E-04	2.5E-04	2.3E-04	2.3E-04	2.2E-04
SSW	2.9E-04	2.8E-04	2.2E-04	2.2E-04	2.0E-04	2.0E-04	1.9E-04
S	3.6E-04	3.4E-04	2.7E-04	2.7E-04	2.4E-04	2.4E-04	2.3E-04
SSE	7.3E-04	6.9E-04	5.5E-04	5.4E-04	4.8E-04	4.7E-04	4.7E-04
SE	1.2E-03	1.1E-03	8.9E-04	8.7E-04	7.7E-04	7.7E-04	7.6E-04
ESE	1.3E-03	1.2E-03	9.5E-04	9.3E-04	8.2E-04	8.2E-04	8.1E-04
E	1.5E-03	1.4E-03	1.1E-03	1.1E-03	9.5E-04	9.5E-04	9.4E-04
ENE	1.4E-03	1.3E-03	1.1E-03	1.0E-03	9.2E-04	9.2E-04	9.0E-04
NE	1.2E-03	1.1E-03	9.1E-04	9.0E-04	8.0E-04	8.0E-04	7.9E-04
NNE	7.5E-04	7.1E-04	5.7E-04	5.6E-04	5.0E-04	5.0E-04	4.9E-04

000451

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	2571	2116	1849	1825	1948	1669
N	2.0E-04	2.8E-04	3.6E-04	3.7E-04	3.3E-04	4.4E-04
NNW	1.3E-04	1.9E-04	2.4E-04	2.4E-04	2.1E-04	2.9E-04
NW	1.3E-04	1.9E-04	2.4E-04	2.4E-04	2.2E-04	2.9E-04
WNW	1.5E-04	2.1E-04	2.6E-04	2.7E-04	2.4E-04	3.2E-04
W	2.3E-04	3.3E-04	4.2E-04	4.4E-04	3.8E-04	5.2E-04
WSW	2.3E-04	3.3E-04	4.1E-04	4.2E-04	3.8E-04	5.0E-04
SW	1.4E-04	1.9E-04	2.4E-04	2.5E-04	2.2E-04	2.9E-04
SSW	1.2E-04	1.6E-04	2.1E-04	2.1E-04	1.9E-04	2.5E-04
S	1.4E-04	2.0E-04	2.5E-04	2.6E-04	2.3E-04	3.0E-04
SSE	2.7E-04	3.9E-04	5.0E-04	5.2E-04	4.5E-04	6.2E-04
SE	4.4E-04	6.3E-04	8.2E-04	8.4E-04	7.4E-04	1.0E-03
ESE	4.7E-04	6.7E-04	8.8E-04	9.0E-04	7.9E-04	1.1E-03
E	5.5E-04	7.8E-04	1.0E-03	1.0E-03	9.1E-04	1.2E-03
ENE	5.3E-04	7.6E-04	9.7E-04	1.0E-03	8.8E-04	1.2E-03
NE	4.7E-04	6.6E-04	8.5E-04	8.7E-04	7.7E-04	1.0E-03
NNE	2.9E-04	4.1E-04	5.3E-04	5.4E-04	4.8E-04	6.4E-04

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m) 915	789	1198	855	641	980	1372
N	1.2E-08	1.6E-08	7.1E-09	1.3E-08	2.4E-08	1.0E-08	5.5E-09
NNW	7.5E-09	1.0E-08	4.5E-09	8.6E-09	1.5E-08	6.5E-09	3.5E-09
NW	7.7E-09	1.0E-08	4.6E-09	8.8E-09	1.6E-08	6.7E-09	3.6E-09
WNW	8.7E-09	1.2E-08	5.2E-09	9.9E-09	1.8E-08	7.5E-09	4.0E-09
W	1.4E-08	1.9E-08	8.3E-09	1.6E-08	2.9E-08	1.2E-08	6.4E-09
WSW	1.3E-08	1.7E-08	7.7E-09	1.4E-08	2.5E-08	1.1E-08	6.1E-09
SW	7.4E-09	9.8E-09	4.5E-09	8.4E-09	1.5E-08	6.4E-09	3.5E-09
SSW	6.5E-09	8.7E-09	3.9E-09	7.4E-09	1.3E-08	5.6E-09	3.0E-09
S	8.1E-09	1.1E-08	4.9E-09	9.3E-09	1.7E-08	7.0E-09	3.8E-09
SSE	1.7E-08	2.3E-08	1.0E-08	2.0E-08	3.6E-08	1.5E-08	7.8E-09
SE	2.8E-08	3.8E-08	1.7E-08	3.3E-08	5.9E-08	2.4E-08	1.3E-08
ESE	3.0E-08	4.1E-08	1.8E-08	3.5E-08	6.3E-08	2.6E-08	1.4E-08
E	3.4E-08	4.6E-08	2.0E-08	3.9E-08	7.0E-08	2.9E-08	1.6E-08
ENE	3.2E-08	4.3E-08	1.9E-08	3.7E-08	6.6E-08	2.8E-08	1.5E-08
NE	2.8E-08	3.7E-08	1.7E-08	3.2E-08	5.7E-08	2.4E-08	1.3E-08
NNE	1.7E-08	2.3E-08	1.0E-08	1.9E-08	3.4E-08	1.5E-08	7.9E-09

Direction	Distance (m) 1528	1572	1777	1795	1904	1907	1921
N	4.4E-09	4.2E-09	3.4E-09	3.3E-09	2.9E-09	2.9E-09	2.9E-09
NNW	2.9E-09	2.7E-09	2.2E-09	2.1E-09	1.9E-09	1.9E-09	1.9E-09
NW	2.9E-09	2.8E-09	2.2E-09	2.2E-09	1.9E-09	1.9E-09	1.9E-09
WNW	3.2E-09	3.1E-09	2.4E-09	2.4E-09	2.1E-09	2.1E-09	2.1E-09
W	5.2E-09	4.9E-09	3.9E-09	3.9E-09	3.4E-09	3.4E-09	3.4E-09
WSW	5.0E-09	4.7E-09	3.8E-09	3.7E-09	3.4E-09	3.3E-09	3.3E-09
SW	2.9E-09	2.7E-09	2.2E-09	2.2E-09	1.9E-09	1.9E-09	1.9E-09
SSW	2.5E-09	2.4E-09	1.9E-09	1.9E-09	1.7E-09	1.7E-09	1.6E-09
S	3.0E-09	2.9E-09	2.3E-09	2.3E-09	2.0E-09	2.0E-09	2.0E-09
SSE	6.3E-09	5.9E-09	4.7E-09	4.6E-09	4.1E-09	4.1E-09	4.0E-09
SE	1.0E-08	9.7E-09	7.7E-09	7.5E-09	6.7E-09	6.7E-09	6.6E-09
ESE	1.1E-08	1.0E-08	8.2E-09	8.0E-09	7.1E-09	7.1E-09	7.0E-09
E	1.3E-08	1.2E-08	9.4E-09	9.3E-09	8.2E-09	8.2E-09	8.1E-09
ENE	1.2E-08	1.1E-08	9.1E-09	8.9E-09	7.9E-09	7.9E-09	7.8E-09
NE	1.0E-08	9.9E-09	7.9E-09	7.7E-09	6.9E-09	6.9E-09	6.8E-09
NNE	6.5E-09	6.1E-09	4.9E-09	4.8E-09	4.3E-09	4.3E-09	4.2E-09

000453

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	2571	2116	1849	1825	1948	1669
N	1.7E-09	2.4E-09	3.1E-09	3.2E-09	2.8E-09	3.8E-09
NNW	1.1E-09	1.6E-09	2.0E-09	2.1E-09	1.8E-09	2.4E-09
NW	1.1E-09	1.6E-09	2.0E-09	2.1E-09	1.8E-09	2.5E-09
WNW	1.2E-09	1.7E-09	2.2E-09	2.3E-09	2.0E-09	2.7E-09
W	2.0E-09	2.8E-09	3.6E-09	3.7E-09	3.3E-09	4.4E-09
WSW	2.0E-09	2.8E-09	3.5E-09	3.6E-09	3.2E-09	4.3E-09
SW	1.1E-09	1.6E-09	2.0E-09	2.1E-09	1.9E-09	2.5E-09
SSW	9.7E-10	1.4E-09	1.8E-09	1.8E-09	1.6E-09	2.1E-09
S	1.2E-09	1.7E-09	2.1E-09	2.2E-09	1.9E-09	2.6E-09
SSE	2.3E-09	3.3E-09	4.3E-09	4.5E-09	3.9E-09	5.3E-09
SE	3.8E-09	5.4E-09	7.1E-09	7.3E-09	6.4E-09	8.7E-09
ESE	4.0E-09	5.8E-09	7.5E-09	7.7E-09	6.8E-09	9.2E-09
E	4.7E-09	6.7E-09	8.7E-09	9.0E-09	7.9E-09	1.1E-08
ENE	4.6E-09	6.5E-09	8.4E-09	8.6E-09	7.6E-09	1.0E-08
NE	4.0E-09	5.7E-09	7.3E-09	7.5E-09	6.6E-09	8.9E-09
NNE	2.5E-09	3.5E-09	4.6E-09	4.7E-09	4.1E-09	5.5E-09

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Apr 8, 1998 2:27 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent (mrem/year)
4.24E-03

At This Location: 882 Meters East

Source Category: REMEDIATION SITE
Source Type: Area
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
WASTE PIT 5 [G2]

Dataset Name: 97-Z016-G2
Dataset Date: Apr 8, 1998 2:22 pm
Wind File: WNDFILES\97STAR.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 882 Meters East
Lifetime Fatal Cancer Risk: 3.67E-08

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	1.40E-05
BREAST	1.47E-05
R MAR	3.86E-03
LUNGS	1.93E-02
THYROID	1.39E-05
ENDOST	4.80E-02
RMNDR	5.76E-05
EFFEC	4.24E-03

RADIONUCLIDE EMISSIONS DURING THE YEAR 1997

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	1.00	4.2E-07	4.2E-07
U-235	Y	1.00	1.7E-08	1.7E-08
U-236	Y	1.00	4.3E-08	4.3E-08
U-238	Y	1.00	3.1E-07	3.1E-07
RA-226	W	1.00	2.7E-07	2.7E-07
RA-228	W	1.00	3.4E-08	3.4E-08
TH-228	Y	1.00	4.3E-08	4.3E-08
TH-230	Y	1.00	4.9E-06	4.9E-06
TH-232	Y	1.00	3.4E-08	3.4E-08
TH-234	Y	1.00	3.2E-07	3.2E-07

SITE INFORMATION

Temperature: 11 degrees C
Precipitation: 102 cm/y
Mixing Height: 950 m

SOURCE INFORMATION

Source Number: 1

Source Height (m): 1.00
Area (sq m): 1.82E+03

Plume Rise
Momentum (m/s): 0.00E+00
(Exit Velocity)

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

1086	989	1469	2446	2959	1948	3028	1043	2198	2743
2795	1095	2003	882	1182	1272	1225	1885	1906	1730

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Apr 8, 1998 2:27 pm

Facility: FERNALD ENVIRONMENTAL.MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Area
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
WASTE PIT 5 [G2]

Dataset Name: 97-Z016-G2
Dataset Date: Apr 8, 1998 2:22 pm
Wind File: WNDFILES\97STAR.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	1.40E-05
BREAST	1.47E-05
R MAR	3.86E-03
LUNGS	1.93E-02
THYROID	1.39E-05
ENDOST	4.80E-02
RMNDR	5.76E-05
EFFEC	4.24E-03

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	7.35E-05
INHALATION	4.17E-03
AIR IMMERSION	1.69E-11
GROUND SURFACE	5.01E-07
INTERNAL	4.24E-03
EXTERNAL	5.01E-07
TOTAL	4.24E-03

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	1.80E-04
U-235	7.02E-06
U-236	1.76E-05
U-238	1.20E-04
RA-226	1.49E-05
RA-228	7.17E-07
TH-228	3.42E-05
TH-230	3.83E-03
TH-232	3.79E-05
TH-234	7.46E-08
TOTAL	4.24E-03

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	3.26E-09
BONE	2.14E-09
THYROID	2.36E-12
BREAST	2.23E-11
LUNG	3.11E-08
STOMACH	1.61E-11
BOWEL	1.69E-11
LIVER	1.00E-10
PANCREAS	1.15E-11
URINARY	5.65E-11
OTHER	1.41E-11
TOTAL	3.67E-08

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	2.83E-10
INHALATION	3.64E-08
AIR IMMERSION	3.84E-16
GROUND SURFACE	1.13E-11
INTERNAL	3.67E-08
EXTERNAL	1.13E-11
TOTAL	3.67E-08

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	2.32E-09
U-235	9.23E-11
U-236	2.27E-10
U-238	1.56E-09
RA-226	2.06E-10
RA-228	7.54E-12
TH-228	6.85E-10
TH-230	3.14E-08
TH-232	2.13E-10
TH-234	2.49E-12
TOTAL	3.67E-08

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

Direction	Distance (m) 1086	989	1469	2446	2959	1948	3028
N	9.8E-04	1.2E-03	5.6E-04	2.2E-04	1.6E-04	3.3E-04	1.5E-04
NNW	6.3E-04	7.4E-04	3.6E-04	1.4E-04	1.0E-04	2.1E-04	9.8E-05
NW	6.4E-04	7.6E-04	3.6E-04	1.4E-04	1.0E-04	2.1E-04	9.9E-05
WNW	7.2E-04	8.5E-04	4.0E-04	1.6E-04	1.1E-04	2.4E-04	1.1E-04
W	1.2E-03	1.4E-03	6.5E-04	2.5E-04	1.8E-04	3.8E-04	1.7E-04
WSW	1.1E-03	1.3E-03	6.2E-04	2.5E-04	1.8E-04	3.7E-04	1.7E-04
SW	6.2E-04	7.3E-04	3.6E-04	1.5E-04	1.1E-04	2.2E-04	1.0E-04
SSW	5.4E-04	6.4E-04	3.1E-04	1.3E-04	9.0E-05	1.9E-04	8.7E-05
S	6.7E-04	8.0E-04	3.8E-04	1.5E-04	1.1E-04	2.3E-04	1.0E-04
SSE	1.4E-03	1.7E-03	7.8E-04	3.0E-04	2.1E-04	4.5E-04	2.0E-04
SE	2.3E-03	2.8E-03	1.3E-03	4.8E-04	3.4E-04	7.4E-04	3.2E-04
ESE	2.5E-03	2.9E-03	1.4E-03	5.1E-04	3.6E-04	7.8E-04	3.4E-04
E	2.8E-03	3.3E-03	1.6E-03	6.0E-04	4.2E-04	9.1E-04	4.0E-04
ENE	2.7E-03	3.2E-03	1.5E-03	5.8E-04	4.1E-04	8.8E-04	3.9E-04
NE	2.3E-03	2.7E-03	1.3E-03	5.1E-04	3.6E-04	7.6E-04	3.4E-04
NNE	1.4E-03	1.7E-03	8.1E-04	3.2E-04	2.3E-04	4.8E-04	2.2E-04

Direction	Distance (m) 1043	2198	2743	2795	1095	2003	882
N	1.0E-03	2.6E-04	1.8E-04	1.7E-04	9.6E-04	3.1E-04	1.5E-03
NNW	6.7E-04	1.7E-04	1.2E-04	1.1E-04	6.2E-04	2.0E-04	9.4E-04
NW	6.9E-04	1.7E-04	1.2E-04	1.1E-04	6.3E-04	2.0E-04	9.6E-04
WNW	7.7E-04	1.9E-04	1.3E-04	1.2E-04	7.1E-04	2.2E-04	1.1E-03
W	1.2E-03	3.1E-04	2.1E-04	2.0E-04	1.1E-03	3.6E-04	1.7E-03
WSW	1.1E-03	3.0E-04	2.1E-04	2.0E-04	1.0E-03	3.6E-04	1.6E-03
SW	6.6E-04	1.8E-04	1.2E-04	1.2E-04	6.1E-04	2.1E-04	9.2E-04
SSW	5.8E-04	1.5E-04	1.0E-04	9.9E-05	5.3E-04	1.8E-04	8.1E-04
S	7.2E-04	1.8E-04	1.2E-04	1.2E-04	6.6E-04	2.1E-04	1.0E-03
SSE	1.5E-03	3.6E-04	2.4E-04	2.3E-04	1.4E-03	4.3E-04	2.1E-03
SE	2.5E-03	5.9E-04	3.9E-04	3.8E-04	2.3E-03	6.9E-04	3.5E-03
ESE	2.7E-03	6.3E-04	4.2E-04	4.0E-04	2.4E-03	7.4E-04	3.7E-03
E	3.0E-03	7.3E-04	4.8E-04	4.7E-04	2.8E-03	8.6E-04	4.2E-03
ENE	2.9E-03	7.0E-04	4.7E-04	4.6E-04	2.6E-03	8.3E-04	4.0E-03
NE	2.5E-03	6.1E-04	4.1E-04	4.0E-04	2.3E-03	7.2E-04	3.4E-03
NNE	1.5E-03	3.9E-04	2.6E-04	2.5E-04	1.4E-03	4.5E-04	2.1E-03

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INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1182	1272	1225	1885	1906	1730
N	8.4E-04	7.3E-04	7.8E-04	3.5E-04	3.4E-04	4.1E-04
NNW	5.4E-04	4.7E-04	5.0E-04	2.3E-04	2.2E-04	2.7E-04
NW	5.5E-04	4.8E-04	5.1E-04	2.3E-04	2.2E-04	2.7E-04
WNW	6.1E-04	5.3E-04	5.7E-04	2.5E-04	2.5E-04	3.0E-04
W	9.9E-04	8.6E-04	9.2E-04	4.1E-04	4.0E-04	4.8E-04
WSW	9.2E-04	8.0E-04	8.6E-04	4.0E-04	3.9E-04	4.6E-04
SW	5.3E-04	4.7E-04	5.0E-04	2.3E-04	2.3E-04	2.7E-04
SSW	4.7E-04	4.1E-04	4.4E-04	2.0E-04	1.9E-04	2.3E-04
S	5.8E-04	5.0E-04	5.4E-04	2.4E-04	2.4E-04	2.8E-04
SSE	1.2E-03	1.0E-03	1.1E-03	4.8E-04	4.7E-04	5.7E-04
SE	2.0E-03	1.7E-03	1.9E-03	7.9E-04	7.7E-04	9.4E-04
ESE	2.1E-03	1.8E-03	2.0E-03	8.4E-04	8.2E-04	1.0E-03
E	2.4E-03	2.1E-03	2.2E-03	9.7E-04	9.5E-04	1.2E-03
ENE	2.3E-03	2.0E-03	2.1E-03	9.4E-04	9.2E-04	1.1E-03
NE	2.0E-03	1.7E-03	1.8E-03	8.2E-04	8.0E-04	9.6E-04
NNE	1.2E-03	1.1E-03	1.1E-03	5.1E-04	5.0E-04	6.0E-04

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m) 1086	989	1469	2446	2959	1948	3028
N	8.4E-09	1.0E-08	4.8E-09	1.9E-09	1.3E-09	2.8E-09	1.3E-09
NNW	5.4E-09	6.4E-09	3.1E-09	1.2E-09	8.6E-10	1.8E-09	8.2E-10
NW	5.5E-09	6.5E-09	3.1E-09	1.2E-09	8.6E-10	1.8E-09	8.2E-10
WNW	6.2E-09	7.3E-09	3.5E-09	1.3E-09	9.4E-10	2.0E-09	9.0E-10
W	1.0E-08	1.2E-08	5.6E-09	2.2E-09	1.5E-09	3.3E-09	1.5E-09
WSW	9.2E-09	1.1E-08	5.3E-09	2.2E-09	1.5E-09	3.2E-09	1.5E-09
SW	5.3E-09	6.3E-09	3.1E-09	1.2E-09	8.9E-10	1.8E-09	8.5E-10
SSW	4.7E-09	5.5E-09	2.7E-09	1.1E-09	7.5E-10	1.6E-09	7.2E-10
S	5.8E-09	6.9E-09	3.3E-09	1.3E-09	9.0E-10	1.9E-09	8.6E-10
SSE	1.2E-08	1.4E-08	6.8E-09	2.6E-09	1.8E-09	3.9E-09	1.7E-09
SE	2.0E-08	2.4E-08	1.1E-08	4.2E-09	2.9E-09	6.4E-09	2.8E-09
ESE	2.1E-08	2.5E-08	1.2E-08	4.4E-09	3.1E-09	6.8E-09	2.9E-09
E	2.4E-08	2.9E-08	1.4E-08	5.2E-09	3.6E-09	7.9E-09	3.5E-09
ENE	2.3E-08	2.7E-08	1.3E-08	5.0E-09	3.5E-09	7.6E-09	3.4E-09
NE	2.0E-08	2.4E-08	1.1E-08	4.4E-09	3.1E-09	6.6E-09	2.9E-09
NNE	1.2E-08	1.4E-08	7.0E-09	2.7E-09	1.9E-09	4.1E-09	1.9E-09

Direction	Distance (m) 1043	2198	2743	2795	1095	2003	882
N	9.1E-09	2.3E-09	1.5E-09	1.5E-09	8.3E-09	2.7E-09	1.3E-08
NNW	5.8E-09	1.5E-09	9.8E-10	9.5E-10	5.3E-09	1.7E-09	8.1E-09
NW	5.9E-09	1.5E-09	9.9E-10	9.5E-10	5.4E-09	1.7E-09	8.3E-09
WNW	6.6E-09	1.6E-09	1.1E-09	1.0E-09	6.1E-09	1.9E-09	9.3E-09
W	1.1E-08	2.6E-09	1.8E-09	1.7E-09	9.8E-09	3.1E-09	1.5E-08
WSW	9.9E-09	2.6E-09	1.8E-09	1.7E-09	9.1E-09	3.0E-09	1.4E-08
SW	5.7E-09	1.5E-09	1.0E-09	9.8E-10	5.2E-09	1.8E-09	7.9E-09
SSW	5.0E-09	1.3E-09	8.6E-10	8.3E-10	4.6E-09	1.5E-09	7.0E-09
S	6.2E-09	1.5E-09	1.0E-09	1.0E-09	5.7E-09	1.8E-09	8.7E-09
SSE	1.3E-08	3.1E-09	2.1E-09	2.0E-09	1.2E-08	3.7E-09	1.8E-08
SE	2.2E-08	5.1E-09	3.3E-09	3.2E-09	2.0E-08	6.0E-09	3.1E-08
ESE	2.3E-08	5.4E-09	3.6E-09	3.4E-09	2.1E-08	6.4E-09	3.2E-08
E	2.6E-08	6.3E-09	4.2E-09	4.0E-09	2.4E-08	7.4E-09	3.7E-08
ENE	2.5E-08	6.1E-09	4.1E-09	3.9E-09	2.3E-08	7.2E-09	3.5E-08
NE	2.1E-08	5.3E-09	3.5E-09	3.4E-09	2.0E-08	6.2E-09	3.0E-08
NNE	1.3E-08	3.3E-09	2.2E-09	2.2E-09	1.2E-08	3.9E-09	1.8E-08

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1182	1272	1225	1885	1906	1730
N	7.2E-09	6.3E-09	6.8E-09	3.0E-09	2.9E-09	3.5E-09
NNW	4.6E-09	4.1E-09	4.3E-09	1.9E-09	1.9E-09	2.3E-09
NW	4.7E-09	4.1E-09	4.4E-09	2.0E-09	1.9E-09	2.3E-09
WNW	5.3E-09	4.6E-09	4.9E-09	2.2E-09	2.1E-09	2.5E-09
W	8.5E-09	7.4E-09	8.0E-09	3.5E-09	3.4E-09	4.1E-09
WSW	7.9E-09	6.9E-09	7.4E-09	3.4E-09	3.3E-09	4.0E-09
SW	4.6E-09	4.0E-09	4.3E-09	2.0E-09	1.9E-09	2.3E-09
SSW	4.0E-09	3.5E-09	3.8E-09	1.7E-09	1.6E-09	2.0E-09
S	5.0E-09	4.3E-09	4.7E-09	2.1E-09	2.0E-09	2.4E-09
SSE	1.0E-08	9.0E-09	9.7E-09	4.2E-09	4.1E-09	4.9E-09
SE	1.7E-08	1.5E-08	1.6E-08	6.8E-09	6.7E-09	8.1E-09
ESE	1.8E-08	1.6E-08	1.7E-08	7.2E-09	7.1E-09	8.6E-09
E	2.1E-08	1.8E-08	1.9E-08	8.4E-09	8.2E-09	9.9E-09
ENE	2.0E-08	1.7E-08	1.8E-08	8.1E-09	7.9E-09	9.5E-09
NE	1.7E-08	1.5E-08	1.6E-08	7.0E-09	6.9E-09	8.3E-09
NNE	1.0E-08	9.1E-09	9.8E-09	4.4E-09	4.3E-09	5.1E-09

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Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Apr 20, 1998 7:57 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent (mrem/year)
1.19E+00

At This Location: 609 Meters East

Source Category: REMEDIATION SITE
Source Type: Area
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
WPRAP - Railyard [G1]

Dataset Name: 97-Z036a-RR-G1
Dataset Date: Apr 20, 1998 7:50 am
Wind File: WNDFILES\97STAR.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 609 Meters East
Lifetime Fatal Cancer Risk: 1.53E-05

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	3.11E-03
BREAST	3.55E-03
R MAR	1.50E-01
LUNGS	9.09E+00
THYROID	3.02E-03
ENDOST	1.96E+00
RMNDR	7.73E-02
EFFEC	1.19E+00

RADIONUCLIDE EMISSIONS DURING THE YEAR 1997

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	1.00	5.7E-04	5.7E-04
U-235	Y	1.00	3.0E-05	3.0E-05
U-236	Y	1.00	2.2E-05	2.2E-05
U-238	Y	1.00	6.3E-04	6.3E-04
RA-226	W	1.00	4.0E-07	4.0E-07
RA-228	W	1.00	1.6E-06	1.6E-06
TH-228	Y	1.00	1.7E-05	1.7E-05
TH-230	Y	1.00	5.0E-05	5.0E-05
TH-232	Y	1.00	2.7E-06	2.7E-06
TH-234	Y	1.00	2.5E-03	2.5E-03

SITE INFORMATION

Temperature: 11 degrees C
Precipitation: 102 cm/y
Mixing Height: 950 m

SOURCE INFORMATION

Source Number: 1

Source Height (m): 1.00
Area (sq m): 9.78E+04

Plume Rise Pasquill Cat:	A	B	C	D	E	F	G
Zero:	0.00	0.00	0.00	0.00	0.00	0.00	0.00

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

609	648	1693	1601	1461	1602	1811	1891	1926	2067
2060	2040	1899	1876	2373	1791	1288	1234	1125	952

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C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Apr 20, 1998 7:57 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Area
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
WPRAP - Railyard [G1]

Dataset Name: 97-Z036a-RR-G1
Dataset Date: Apr 20, 1998 7:50 am
Wind File: WNDFILES\97STAR.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	3.11E-03
BREAST	3.55E-03
R MAR	1.50E-01
LUNGS	9.09E+00
THYROID	3.02E-03
ENDOST	1.96E+00
RMNDR	7.73E-02
EFFEC	1.19E+00

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	5.49E-02
INHALATION	1.14E+00
AIR IMMERSION	9.53E-08
GROUND SURFACE	6.35E-04
INTERNAL	1.19E+00
EXTERNAL	6.35E-04
TOTAL	1.19E+00

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	5.15E-01
U-235	2.58E-02
U-236	1.89E-02
U-238	5.12E-01
RA-226	4.53E-05
RA-228	7.07E-05
TH-228	2.84E-02
TH-230	8.36E-02
TH-232	6.40E-03
TH-234	1.22E-03
TOTAL	1.19E+00

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	1.45E-07
BONE	9.57E-08
THYROID	7.00E-10
BREAST	7.97E-09
LUNG	1.48E-05
STOMACH	5.26E-09
BOWEL	1.39E-08
LIVER	6.76E-09
PANCREAS	3.05E-09
URINARY	1.60E-07
OTHER	3.73E-09
TOTAL	1.53E-05

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	2.91E-07
INHALATION	1.50E-05
AIR IMMERSION	2.12E-12
GROUND SURFACE	1.46E-08
INTERNAL	1.52E-05
EXTERNAL	1.46E-08
TOTAL	1.53E-05

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	6.66E-06
U-235	3.40E-07
U-236	2.45E-07
U-238	6.68E-06
RA-226	6.39E-10
RA-228	7.52E-10
TH-228	5.70E-07
TH-230	6.86E-07
TH-232	3.61E-08
TH-234	4.14E-08
TOTAL	1.53E-05

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	609	648	1693	1601	1461	1602	1811
N	4.2E-01	3.7E-01	5.9E-02	6.5E-02	7.7E-02	6.5E-02	5.2E-02
NNW	2.9E-01	2.5E-01	3.9E-02	4.3E-02	5.1E-02	4.3E-02	3.5E-02
NW	2.8E-01	2.4E-01	3.9E-02	4.3E-02	5.1E-02	4.3E-02	3.5E-02
WNW	3.3E-01	2.8E-01	4.3E-02	4.8E-02	5.7E-02	4.8E-02	3.9E-02
W	4.7E-01	4.2E-01	6.9E-02	7.6E-02	9.0E-02	7.6E-02	6.1E-02
WSW	4.2E-01	3.8E-01	6.6E-02	7.3E-02	8.6E-02	7.3E-02	5.9E-02
SW	2.7E-01	2.4E-01	3.9E-02	4.3E-02	5.1E-02	4.3E-02	3.5E-02
SSW	2.4E-01	2.1E-01	3.4E-02	3.8E-02	4.4E-02	3.8E-02	3.1E-02
S	3.2E-01	2.8E-01	4.1E-02	4.6E-02	5.4E-02	4.6E-02	3.7E-02
SSE	6.2E-01	5.5E-01	8.2E-02	9.1E-02	1.1E-01	9.1E-02	7.2E-02
SE	9.8E-01	8.7E-01	1.3E-01	1.5E-01	1.8E-01	1.5E-01	1.2E-01
ESE	1.1E+00	9.6E-01	1.4E-01	1.6E-01	1.9E-01	1.6E-01	1.2E-01
E	1.2E+00	1.1E+00	1.6E-01	1.8E-01	2.1E-01	1.8E-01	1.4E-01
ENE	1.1E+00	9.9E-01	1.6E-01	1.7E-01	2.0E-01	1.7E-01	1.4E-01
NE	9.5E-01	8.4E-01	1.4E-01	1.5E-01	1.8E-01	1.5E-01	1.2E-01
NNE	6.2E-01	5.4E-01	8.5E-02	9.4E-02	1.1E-01	9.4E-02	7.5E-02

	Distance (m)						
Direction	1891	1926	2067	2060	2040	1899	1876
N	4.9E-02	4.7E-02	4.1E-02	4.2E-02	4.2E-02	4.8E-02	4.9E-02
NNW	3.2E-02	3.1E-02	2.8E-02	2.8E-02	2.8E-02	3.2E-02	3.3E-02
NW	3.3E-02	3.1E-02	2.8E-02	2.8E-02	2.9E-02	3.2E-02	3.3E-02
WNW	3.6E-02	3.4E-02	3.0E-02	3.1E-02	3.1E-02	3.5E-02	3.6E-02
W	5.6E-02	5.4E-02	4.8E-02	4.8E-02	4.9E-02	5.6E-02	5.7E-02
WSW	5.5E-02	5.3E-02	4.7E-02	4.7E-02	4.8E-02	5.5E-02	5.6E-02
SW	3.3E-02	3.2E-02	2.8E-02	2.8E-02	2.9E-02	3.3E-02	3.3E-02
SSW	2.8E-02	2.8E-02	2.5E-02	2.5E-02	2.5E-02	2.8E-02	2.9E-02
S	3.4E-02	3.3E-02	2.9E-02	2.9E-02	3.0E-02	3.4E-02	3.5E-02
SSE	6.6E-02	6.4E-02	5.6E-02	5.6E-02	5.7E-02	6.6E-02	6.7E-02
SE	1.1E-01	1.0E-01	9.0E-02	9.0E-02	9.2E-02	1.1E-01	1.1E-01
ESE	1.1E-01	1.1E-01	9.5E-02	9.6E-02	9.8E-02	1.1E-01	1.2E-01
E	1.3E-01	1.3E-01	1.1E-01	1.1E-01	1.1E-01	1.3E-01	1.3E-01
ENE	1.3E-01	1.2E-01	1.1E-01	1.1E-01	1.1E-01	1.3E-01	1.3E-01
NE	1.1E-01	1.1E-01	9.4E-02	9.4E-02	9.6E-02	1.1E-01	1.1E-01
NNE	7.0E-02	6.7E-02	5.9E-02	6.0E-02	6.1E-02	6.9E-02	7.1E-02

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INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	2373	1791	1288	1234	1125	952
N	3.3E-02	5.4E-02	9.7E-02	1.1E-01	1.2E-01	1.7E-01
NNW	2.2E-02	3.5E-02	6.3E-02	6.9E-02	8.1E-02	1.1E-01
NW	2.2E-02	3.6E-02	6.4E-02	6.9E-02	8.2E-02	1.1E-01
WNW	2.4E-02	3.9E-02	7.2E-02	7.8E-02	9.2E-02	1.2E-01
W	3.8E-02	6.2E-02	1.1E-01	1.2E-01	1.5E-01	2.0E-01
WSW	3.8E-02	6.0E-02	1.1E-01	1.2E-01	1.4E-01	1.8E-01
SW	2.3E-02	3.6E-02	6.3E-02	6.8E-02	8.0E-02	1.1E-01
SSW	2.0E-02	3.1E-02	5.5E-02	6.0E-02	7.0E-02	9.4E-02
S	2.3E-02	3.7E-02	6.8E-02	7.3E-02	8.6E-02	1.2E-01
SSE	4.4E-02	7.4E-02	1.4E-01	1.5E-01	1.8E-01	2.4E-01
SE	7.0E-02	1.2E-01	2.3E-01	2.4E-01	2.9E-01	4.0E-01
ESE	7.5E-02	1.3E-01	2.4E-01	2.6E-01	3.1E-01	4.3E-01
E	8.7E-02	1.5E-01	2.7E-01	3.0E-01	3.5E-01	4.8E-01
ENE	8.4E-02	1.4E-01	2.6E-01	2.8E-01	3.3E-01	4.6E-01
NE	7.4E-02	1.2E-01	2.3E-01	2.4E-01	2.9E-01	3.9E-01
NNE	4.7E-02	7.7E-02	1.4E-01	1.5E-01	1.8E-01	2.4E-01

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	609	648	1693	1601	1461	1602	1811
N	5.4E-06	4.7E-06	7.3E-07	8.1E-07	9.6E-07	8.1E-07	6.5E-07
NNW	3.6E-06	3.2E-06	4.8E-07	5.3E-07	6.2E-07	5.3E-07	4.2E-07
NW	3.5E-06	3.1E-06	4.8E-07	5.3E-07	6.3E-07	5.3E-07	4.3E-07
WNW	4.2E-06	3.6E-06	5.3E-07	5.9E-07	7.0E-07	5.9E-07	4.7E-07
W	6.0E-06	5.3E-06	8.6E-07	9.5E-07	1.1E-06	9.5E-07	7.6E-07
WSW	5.4E-06	4.8E-06	8.3E-07	9.1E-07	1.1E-06	9.1E-07	7.3E-07
SW	3.5E-06	3.0E-06	4.8E-07	5.3E-07	6.2E-07	5.3E-07	4.3E-07
SSW	3.0E-06	2.7E-06	4.2E-07	4.6E-07	5.4E-07	4.6E-07	3.7E-07
S	4.1E-06	3.5E-06	5.1E-07	5.6E-07	6.6E-07	5.6E-07	4.5E-07
SSE	8.0E-06	7.0E-06	1.0E-06	1.1E-06	1.4E-06	1.1E-06	9.0E-07
SE	1.3E-05	1.1E-05	1.7E-06	1.9E-06	2.2E-06	1.9E-06	1.5E-06
ESE	1.4E-05	1.2E-05	1.8E-06	2.0E-06	2.4E-06	2.0E-06	1.6E-06
E	1.5E-05	1.3E-05	2.0E-06	2.3E-06	2.7E-06	2.3E-06	1.8E-06
ENE	1.4E-05	1.3E-05	2.0E-06	2.2E-06	2.6E-06	2.2E-06	1.7E-06
NE	1.2E-05	1.1E-05	1.7E-06	1.9E-06	2.2E-06	1.9E-06	1.5E-06
NNE	7.9E-06	6.9E-06	1.1E-06	1.2E-06	1.4E-06	1.2E-06	9.4E-07

	Distance (m)						
Direction	1891	1926	2067	2060	2040	1899	1876
N	6.0E-07	5.8E-07	5.1E-07	5.1E-07	5.2E-07	5.9E-07	6.1E-07
NNW	3.9E-07	3.8E-07	3.3E-07	3.3E-07	3.4E-07	3.9E-07	4.0E-07
NW	3.9E-07	3.8E-07	3.3E-07	3.4E-07	3.4E-07	3.9E-07	4.0E-07
WNW	4.3E-07	4.2E-07	3.7E-07	3.7E-07	3.8E-07	4.3E-07	4.4E-07
W	7.0E-07	6.7E-07	5.9E-07	5.9E-07	6.0E-07	6.9E-07	7.1E-07
WSW	6.8E-07	6.6E-07	5.8E-07	5.8E-07	5.9E-07	6.7E-07	6.9E-07
SW	4.0E-07	3.8E-07	3.4E-07	3.4E-07	3.5E-07	3.9E-07	4.0E-07
SSW	3.4E-07	3.3E-07	2.9E-07	2.9E-07	3.0E-07	3.4E-07	3.5E-07
S	4.1E-07	4.0E-07	3.5E-07	3.5E-07	3.6E-07	4.1E-07	4.2E-07
SSE	8.3E-07	8.0E-07	6.9E-07	7.0E-07	7.1E-07	8.2E-07	8.4E-07
SE	1.3E-06	1.3E-06	1.1E-06	1.1E-06	1.2E-06	1.3E-06	1.4E-06
ESE	1.4E-06	1.4E-06	1.2E-06	1.2E-06	1.2E-06	1.4E-06	1.5E-06
E	1.7E-06	1.6E-06	1.4E-06	1.4E-06	1.4E-06	1.6E-06	1.7E-06
ENE	1.6E-06	1.5E-06	1.3E-06	1.4E-06	1.4E-06	1.6E-06	1.6E-06
NE	1.4E-06	1.3E-06	1.2E-06	1.2E-06	1.2E-06	1.4E-06	1.4E-06
NNE	8.7E-07	8.4E-07	7.4E-07	7.4E-07	7.5E-07	8.6E-07	8.8E-07

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INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	2373	1791	1288	1234	1125	952
N	4.0E-07	6.6E-07	1.2E-06	1.3E-06	1.6E-06	2.1E-06
NNW	2.6E-07	4.3E-07	7.9E-07	8.5E-07	1.0E-06	1.4E-06
NW	2.6E-07	4.4E-07	8.0E-07	8.7E-07	1.0E-06	1.4E-06
WNW	2.9E-07	4.8E-07	8.9E-07	9.7E-07	1.1E-06	1.6E-06
W	4.6E-07	7.7E-07	1.4E-06	1.6E-06	1.8E-06	2.5E-06
WSW	4.6E-07	7.5E-07	1.3E-06	1.5E-06	1.7E-06	2.3E-06
SW	2.7E-07	4.4E-07	7.8E-07	8.5E-07	1.0E-06	1.3E-06
SSW	2.3E-07	3.8E-07	6.8E-07	7.4E-07	8.7E-07	1.2E-06
S	2.8E-07	4.6E-07	8.4E-07	9.1E-07	1.1E-06	1.5E-06
SSE	5.4E-07	9.2E-07	1.7E-06	1.9E-06	2.3E-06	3.1E-06
SE	8.8E-07	1.5E-06	2.9E-06	3.1E-06	3.7E-06	5.1E-06
ESE	9.3E-07	1.6E-06	3.0E-06	3.3E-06	3.9E-06	5.4E-06
E	1.1E-06	1.8E-06	3.5E-06	3.8E-06	4.5E-06	6.2E-06
ENE	1.1E-06	1.8E-06	3.3E-06	3.6E-06	4.2E-06	5.8E-06
NE	9.2E-07	1.5E-06	2.9E-06	3.1E-06	3.7E-06	5.0E-06
NNE	5.8E-07	9.6E-07	1.8E-06	1.9E-06	2.3E-06	3.1E-06

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Apr 20, 1998 7:57 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

1.58E+00

At This Location: 528 Meters East

Source Category: REMEDIATION SITE
Source Type: Area
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
WPRAP - Railyard [G2]

Dataset Name: 97-Z036a-RR-G2
Dataset Date: Apr 20, 1998 7:52 am
Wind File: WNDFILES\97STAR.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 528 Meters East
Lifetime Fatal Cancer Risk: 2.02E-05

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	4.04E-03
BREAST	4.62E-03
R MAR	1.96E-01
LUNGS	1.20E+01
THYROID	3.93E-03
ENDOST	2.57E+00
RMNDR	9.98E-02
EFFEC	1.58E+00

RADIONUCLIDE EMISSIONS DURING THE YEAR 1997

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	1.00	5.7E-04	5.7E-04
U-235	Y	1.00	3.0E-05	3.0E-05
U-236	Y	1.00	2.2E-05	2.2E-05
U-238	Y	1.00	6.3E-04	6.3E-04
RA-226	W	1.00	4.0E-07	4.0E-07
RA-228	W	1.00	1.6E-06	1.6E-06
TH-228	Y	1.00	1.7E-05	1.7E-05
TH-230	Y	1.00	5.0E-05	5.0E-05
TH-232	Y	1.00	2.7E-06	2.7E-06
TH-234	Y	1.00	2.5E-03	2.5E-03

SITE INFORMATION

Temperature:	11 degrees C
Precipitation:	102 cm/y
Mixing Height:	950 m

SOURCE INFORMATION

Source Number: 1

Source Height (m): 1.00
Area (sq m): 9.78E+04

Plume Rise Pasquill Cat:	A	B	C	D	E	F	G
Zero:	0.00	0.00	0.00	0.00	0.00	0.00	0.00

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

528	1024	2294	1709	2138	2754	2604	1148	1818	1936
1983	1227	2811	1612	1708	1804	1774	2520	2548	1057

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Apr 20, 1998 7:57 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Area
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
WPRAP - Railyard [G2]

Dataset Name: 97-Z036a-RR-G2
Dataset Date: Apr 20, 1998 7:52 am
Wind File: WNDFILES\97STAR.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	4.04E-03
BREAST	4.62E-03
R MAR	1.96E-01
LUNGS	1.20E+01
THYROID	3.93E-03
ENDOST	2.57E+00
RMNDR	9.98E-02
EFFEC	1.58E+00

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	7.08E-02
INHALATION	1.50E+00
AIR IMMERSION	1.26E-07
GROUND SURFACE	8.34E-04
INTERNAL	1.58E+00
EXTERNAL	8.35E-04
TOTAL	1.58E+00

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	6.81E-01
U-235	3.41E-02
U-236	2.50E-02
U-238	6.78E-01
RA-226	5.92E-05
RA-228	9.21E-05
TH-228	3.76E-02
TH-230	1.11E-01
TH-232	8.48E-03
TH-234	1.59E-03
TOTAL	1.58E+00

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	1.89E-07
BONE	1.25E-07
THYROID	9.12E-10
BREAST	1.04E-08
LUNG	1.96E-05
STOMACH	6.84E-09
BOWEL	1.80E-08
LIVER	8.86E-09
PANCREAS	3.97E-09
URINARY	2.06E-07
OTHER	4.86E-09
TOTAL	2.02E-05

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	3.76E-07
INHALATION	1.98E-05
AIR IMMERSION	2.81E-12
GROUND SURFACE	1.92E-08
INTERNAL	2.02E-05
EXTERNAL	1.92E-08
TOTAL	2.02E-05

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	8.81E-06
U-235	4.50E-07
U-236	3.24E-07
U-238	8.84E-06
RA-226	8.42E-10
RA-228	9.85E-10
TH-228	7.55E-07
TH-230	9.08E-07
TH-232	4.78E-08
TH-234	5.45E-08
TOTAL	2.02E-05

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

Direction	Distance (m) 528	1024	2294	1709	2138	2754	2604
N	5.6E-01	1.5E-01	3.4E-02	5.8E-02	3.9E-02	2.5E-02	2.8E-02
NNW	3.9E-01	9.4E-02	2.3E-02	3.8E-02	2.6E-02	1.7E-02	1.9E-02
NW	3.7E-01	9.6E-02	2.3E-02	3.8E-02	2.6E-02	1.7E-02	1.9E-02
WNW	4.5E-01	1.1E-01	2.5E-02	4.2E-02	2.8E-02	1.9E-02	2.1E-02
W	6.0E-01	1.7E-01	4.0E-02	6.7E-02	4.5E-02	2.9E-02	3.2E-02
WSW	5.5E-01	1.6E-01	3.9E-02	6.5E-02	4.4E-02	2.9E-02	3.2E-02
SW	3.7E-01	9.3E-02	2.4E-02	3.8E-02	2.6E-02	1.8E-02	1.9E-02
SSW	3.2E-01	8.2E-02	2.0E-02	3.3E-02	2.3E-02	1.5E-02	1.7E-02
S	4.4E-01	1.0E-01	2.4E-02	4.0E-02	2.7E-02	1.8E-02	2.0E-02
SSE	8.4E-01	2.1E-01	4.6E-02	8.0E-02	5.2E-02	3.4E-02	3.7E-02
SE	1.3E+00	3.5E-01	7.4E-02	1.3E-01	8.4E-02	5.3E-02	5.9E-02
ESE	1.5E+00	3.7E-01	7.9E-02	1.4E-01	8.9E-02	5.7E-02	6.3E-02
E	1.6E+00	4.2E-01	9.2E-02	1.6E-01	1.0E-01	6.6E-02	7.3E-02
ENE	1.5E+00	3.9E-01	8.9E-02	1.5E-01	1.0E-01	6.4E-02	7.1E-02
NE	1.3E+00	3.4E-01	7.8E-02	1.3E-01	8.8E-02	5.6E-02	6.2E-02
NNE	8.4E-01	2.1E-01	5.0E-02	8.3E-02	5.6E-02	3.6E-02	4.0E-02

Direction	Distance (m) 1148	1818	1936	1983	1227	2811	1612
N	1.2E-01	5.2E-02	4.6E-02	4.4E-02	1.1E-01	2.5E-02	6.4E-02
NNW	7.7E-02	3.4E-02	3.0E-02	2.9E-02	6.9E-02	1.7E-02	4.2E-02
NW	7.9E-02	3.4E-02	3.1E-02	2.9E-02	7.0E-02	1.7E-02	4.3E-02
WNW	8.8E-02	3.8E-02	3.4E-02	3.2E-02	7.8E-02	1.8E-02	4.7E-02
W	1.4E-01	6.0E-02	5.3E-02	5.1E-02	1.2E-01	2.8E-02	7.5E-02
WSW	1.3E-01	5.8E-02	5.2E-02	5.0E-02	1.2E-01	2.8E-02	7.2E-02
SW	7.6E-02	3.5E-02	3.1E-02	3.0E-02	6.8E-02	1.7E-02	4.2E-02
SSW	6.7E-02	3.0E-02	2.7E-02	2.6E-02	6.0E-02	1.5E-02	3.7E-02
S	8.3E-02	3.6E-02	3.2E-02	3.1E-02	7.3E-02	1.7E-02	4.5E-02
SSE	1.7E-01	7.1E-02	6.3E-02	6.0E-02	1.5E-01	3.2E-02	8.9E-02
SE	2.8E-01	1.1E-01	1.0E-01	9.6E-02	2.5E-01	5.1E-02	1.4E-01
ESE	3.0E-01	1.2E-01	1.1E-01	1.0E-01	2.6E-01	5.5E-02	1.5E-01
E	3.4E-01	1.4E-01	1.2E-01	1.2E-01	3.0E-01	6.3E-02	1.8E-01
ENE	3.2E-01	1.4E-01	1.2E-01	1.1E-01	2.8E-01	6.2E-02	1.7E-01
NE	2.8E-01	1.2E-01	1.0E-01	1.0E-01	2.5E-01	5.4E-02	1.5E-01
NNE	1.7E-01	7.4E-02	6.6E-02	6.3E-02	1.5E-01	3.5E-02	9.2E-02

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INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1708	1804	1774	2520	2548	1057
N	5.8E-02	5.2E-02	5.4E-02	2.9E-02	2.9E-02	1.4E-01
NNW	3.8E-02	3.5E-02	3.6E-02	2.0E-02	2.0E-02	8.9E-02
NW	3.8E-02	3.5E-02	3.6E-02	2.0E-02	2.0E-02	9.1E-02
WNW	4.2E-02	3.8E-02	4.0E-02	2.2E-02	2.1E-02	1.0E-01
W	6.7E-02	6.1E-02	6.3E-02	3.4E-02	3.3E-02	1.6E-01
WSW	6.5E-02	5.9E-02	6.1E-02	3.4E-02	3.3E-02	1.5E-01
SW	3.8E-02	3.5E-02	3.6E-02	2.0E-02	2.0E-02	8.8E-02
SSW	3.3E-02	3.0E-02	3.1E-02	1.8E-02	1.7E-02	7.7E-02
S	4.0E-02	3.7E-02	3.8E-02	2.1E-02	2.0E-02	9.6E-02
SSE	8.0E-02	7.2E-02	7.4E-02	3.9E-02	3.9E-02	2.0E-01
SE	1.3E-01	1.2E-01	1.2E-01	6.3E-02	6.1E-02	3.3E-01
ESE	1.4E-01	1.2E-01	1.3E-01	6.7E-02	6.5E-02	3.5E-01
E	1.6E-01	1.4E-01	1.5E-01	7.7E-02	7.6E-02	3.9E-01
ENE	1.5E-01	1.4E-01	1.4E-01	7.5E-02	7.4E-02	3.7E-01
NE	1.3E-01	1.2E-01	1.2E-01	6.6E-02	6.5E-02	3.2E-01
NNE	8.3E-02	7.5E-02	7.8E-02	4.2E-02	4.1E-02	2.0E-01

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m) 528	1024	2294	1709	2138	2754	2604
N	7.2E-06	1.9E-06	4.2E-07	7.2E-07	4.8E-07	3.1E-07	3.4E-07
NNW	5.0E-06	1.2E-06	2.8E-07	4.7E-07	3.1E-07	2.0E-07	2.2E-07
NW	4.7E-06	1.2E-06	2.8E-07	4.7E-07	3.1E-07	2.0E-07	2.2E-07
WNW	5.7E-06	1.4E-06	3.0E-07	5.2E-07	3.4E-07	2.2E-07	2.4E-07
W	7.7E-06	2.2E-06	4.9E-07	8.4E-07	5.5E-07	3.5E-07	3.9E-07
WSW	7.1E-06	2.0E-06	4.8E-07	8.1E-07	5.4E-07	3.5E-07	3.9E-07
SW	4.8E-06	1.2E-06	2.8E-07	4.7E-07	3.2E-07	2.1E-07	2.3E-07
SSW	4.1E-06	1.0E-06	2.4E-07	4.1E-07	2.7E-07	1.8E-07	2.0E-07
S	5.7E-06	1.3E-06	2.9E-07	5.0E-07	3.3E-07	2.1E-07	2.3E-07
SSE	1.1E-05	2.7E-06	5.7E-07	1.0E-06	6.5E-07	4.1E-07	4.6E-07
SE	1.6E-05	4.4E-06	9.3E-07	1.6E-06	1.1E-06	6.6E-07	7.4E-07
ESE	1.9E-05	4.7E-06	9.9E-07	1.7E-06	1.1E-06	7.1E-07	7.8E-07
E	2.0E-05	5.3E-06	1.2E-06	2.0E-06	1.3E-06	8.2E-07	9.1E-07
ENE	1.9E-05	5.0E-06	1.1E-06	1.9E-06	1.3E-06	8.0E-07	8.9E-07
NE	1.6E-05	4.3E-06	9.7E-07	1.7E-06	1.1E-06	7.0E-07	7.8E-07
NNE	1.1E-05	2.7E-06	6.1E-07	1.0E-06	6.9E-07	4.4E-07	4.9E-07

Direction	Distance (m) 1148	1818	1936	1983	1227	2811	1612
N	1.5E-06	6.4E-07	5.7E-07	5.4E-07	1.3E-06	2.9E-07	8.0E-07
NNW	9.7E-07	4.2E-07	3.7E-07	3.5E-07	8.6E-07	1.9E-07	5.2E-07
NW	9.9E-07	4.2E-07	3.7E-07	3.6E-07	8.7E-07	1.9E-07	5.2E-07
WNW	1.1E-06	4.6E-07	4.1E-07	3.9E-07	9.8E-07	2.1E-07	5.8E-07
W	1.8E-06	7.5E-07	6.6E-07	6.3E-07	1.6E-06	3.4E-07	9.4E-07
WSW	1.6E-06	7.3E-07	6.5E-07	6.2E-07	1.5E-06	3.4E-07	9.0E-07
SW	9.6E-07	4.2E-07	3.8E-07	3.6E-07	8.5E-07	2.0E-07	5.2E-07
SSW	8.4E-07	3.6E-07	3.2E-07	3.1E-07	7.4E-07	1.7E-07	4.5E-07
S	1.0E-06	4.4E-07	3.9E-07	3.7E-07	9.2E-07	2.0E-07	5.5E-07
SSE	2.2E-06	8.9E-07	7.8E-07	7.5E-07	1.9E-06	4.0E-07	1.1E-06
SE	3.6E-06	1.4E-06	1.3E-06	1.2E-06	3.1E-06	6.4E-07	1.8E-06
ESE	3.8E-06	1.5E-06	1.4E-06	1.3E-06	3.3E-06	6.8E-07	1.9E-06
E	4.3E-06	1.8E-06	1.6E-06	1.5E-06	3.8E-06	7.9E-07	2.2E-06
ENE	4.1E-06	1.7E-06	1.5E-06	1.4E-06	3.6E-06	7.7E-07	2.2E-06
NE	3.5E-06	1.5E-06	1.3E-06	1.3E-06	3.1E-06	6.7E-07	1.9E-06
NNE	2.2E-06	9.3E-07	8.3E-07	7.9E-07	1.9E-06	4.3E-07	1.2E-06

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1708	1804	1774	2520	2548	1057
N	7.2E-07	6.5E-07	6.7E-07	3.6E-07	3.5E-07	1.7E-06
NNW	4.7E-07	4.2E-07	4.4E-07	2.3E-07	2.3E-07	1.1E-06
NW	4.7E-07	4.3E-07	4.4E-07	2.4E-07	2.3E-07	1.1E-06
WNW	5.2E-07	4.7E-07	4.9E-07	2.6E-07	2.5E-07	1.3E-06
W	8.4E-07	7.6E-07	7.8E-07	4.1E-07	4.1E-07	2.1E-06
WSW	8.1E-07	7.4E-07	7.6E-07	4.1E-07	4.0E-07	1.9E-06
SW	4.7E-07	4.3E-07	4.4E-07	2.4E-07	2.4E-07	1.1E-06
SSW	4.1E-07	3.7E-07	3.8E-07	2.1E-07	2.0E-07	9.7E-07
S	5.0E-07	4.5E-07	4.6E-07	2.5E-07	2.4E-07	1.2E-06
SSE	1.0E-06	9.0E-07	9.3E-07	4.8E-07	4.8E-07	2.5E-06
SE	1.6E-06	1.5E-06	1.5E-06	7.8E-07	7.7E-07	4.2E-06
ESE	1.7E-06	1.6E-06	1.6E-06	8.3E-07	8.2E-07	4.4E-06
E	2.0E-06	1.8E-06	1.9E-06	9.7E-07	9.5E-07	5.0E-06
ENE	1.9E-06	1.7E-06	1.8E-06	9.4E-07	9.2E-07	4.7E-06
NE	1.7E-06	1.5E-06	1.6E-06	8.2E-07	8.1E-07	4.1E-06
NNE	1.0E-06	9.5E-07	9.8E-07	5.2E-07	5.1E-07	2.5E-06

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Apr 20, 1998 9:29 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent (mrem/year)
8.89E-01

At This Location: 853 Meters East

Source Category: REMEDIATION SITE
Source Type: Area
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
STOCKPILE W800057 [G1]

Dataset Name: 97-PILE1-G1
Dataset Date: Apr 20, 1998 9:16 am
Wind File: WNDFILES\97STAR.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 853 Meters East
Lifetime Fatal Cancer Risk: 1.14E-05

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	2.41E-03
BREAST	2.75E-03
R MAR	1.14E-01
LUNGS	6.76E+00
THYROID	2.35E-03
ENDOST	1.50E+00
RMNDR	6.07E-02
EFFEC	8.89E-01

RADIONUCLIDE EMISSIONS DURING THE YEAR 1997

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	1.00	8.3E-04	8.3E-04
U-235	Y	1.00	4.4E-05	4.4E-05
U-236	Y	1.00	3.2E-05	3.2E-05
U-238	Y	1.00	9.3E-04	9.3E-04
RA-226	W	1.00	5.9E-07	5.9E-07
RA-228	W	1.00	2.4E-06	2.4E-06
TH-228	Y	1.00	2.5E-05	2.5E-05
TH-230	Y	1.00	7.4E-05	7.4E-05
TH-232	Y	1.00	3.9E-06	3.9E-06
TH-234	Y	1.00	3.7E-03	3.7E-03

SITE INFORMATION

Temperature:	11 degrees C
Precipitation:	102 cm/y
Mixing Height:	950 m

SOURCE INFORMATION

Source Number: 1

Source Height (m): 1.00
Area (sq m): 2.85E+04

Plume Rise Pasquill Cat:	A	B	C	D	E	F	G
Zero:	0.00	0.00	0.00	0.00	0.00	0.00	0.00

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

964	1027	2082	1954	1773	1736	1838	1877	1905	2006
1988	1910	1711	1673	2087	1477	913	853	950	1007

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Apr 20, 1998 9:29 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Area
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
STOCKPILE W800057 [G1]

Dataset Name: 97-PILE1-G1
Dataset Date: Apr 20, 1998 9:16 am
Wind File: WNDFILES\97STAR.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	2.41E-03
BREAST	2.75E-03
R MAR	1.14E-01
LUNGS	6.76E+00
THYROID	2.35E-03
ENDOST	1.50E+00
RMNDR	6.07E-02
EFFEC	8.89E-01

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	4.33E-02
INHALATION	8.45E-01
AIR IMMERSION	7.08E-08
GROUND SURFACE	4.83E-04
INTERNAL	8.89E-01
EXTERNAL	4.83E-04
TOTAL	8.89E-01

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	3.84E-01
U-235	1.93E-02
U-236	1.41E-02
U-238	3.82E-01
RA-226	3.47E-05
RA-228	5.43E-05
TH-228	2.12E-02
TH-230	6.22E-02
TH-232	4.77E-03
TH-234	9.31E-04
TOTAL	8.89E-01

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	1.11E-07
BONE	7.31E-08
THYROID	5.41E-10
BREAST	6.13E-09
LUNG	1.10E-05
STOMACH	4.07E-09
BOWEL	1.08E-08
LIVER	5.17E-09
PANCREAS	2.37E-09
URINARY	1.26E-07
OTHER	2.89E-09
TOTAL	1.14E-05

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	2.30E-07
INHALATION	1.11E-05
AIR IMMERSION	1.58E-12
GROUND SURFACE	1.11E-08
INTERNAL	1.14E-05
EXTERNAL	1.11E-08
TOTAL	1.14E-05

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	4.96E-06
U-235	2.53E-07
U-236	1.83E-07
U-238	4.98E-06
RA-226	4.80E-10
RA-228	5.72E-10
TH-228	4.25E-07
TH-230	5.10E-07
TH-232	2.69E-08
TH-234	3.10E-08
TOTAL	1.14E-05

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	964	1027	2082	1954	1773	1736	1838
N	2.4E-01	2.1E-01	6.0E-02	6.7E-02	8.0E-02	8.3E-02	7.4E-02
NNW	1.6E-01	1.4E-01	4.0E-02	4.4E-02	5.2E-02	5.4E-02	4.9E-02
NW	1.6E-01	1.4E-01	4.0E-02	4.4E-02	5.3E-02	5.5E-02	5.0E-02
WNW	1.8E-01	1.6E-01	4.4E-02	4.9E-02	5.8E-02	6.1E-02	5.5E-02
W	2.8E-01	2.5E-01	6.9E-02	7.7E-02	9.2E-02	9.6E-02	8.6E-02
WSW	2.6E-01	2.3E-01	6.8E-02	7.6E-02	9.0E-02	9.3E-02	8.4E-02
SW	1.5E-01	1.4E-01	4.1E-02	4.5E-02	5.3E-02	5.5E-02	5.0E-02
SSW	1.3E-01	1.2E-01	3.5E-02	3.9E-02	4.6E-02	4.8E-02	4.3E-02
S	1.7E-01	1.5E-01	4.2E-02	4.7E-02	5.5E-02	5.8E-02	5.2E-02
SSE	3.5E-01	3.1E-01	8.1E-02	9.1E-02	1.1E-01	1.1E-01	1.0E-01
SE	5.7E-01	5.1E-01	1.3E-01	1.5E-01	1.8E-01	1.8E-01	1.6E-01
ESE	6.1E-01	5.4E-01	1.4E-01	1.6E-01	1.9E-01	2.0E-01	1.8E-01
E	6.9E-01	6.1E-01	1.6E-01	1.8E-01	2.2E-01	2.3E-01	2.0E-01
ENE	6.5E-01	5.8E-01	1.5E-01	1.7E-01	2.1E-01	2.2E-01	2.0E-01
NE	5.6E-01	5.0E-01	1.4E-01	1.5E-01	1.8E-01	1.9E-01	1.7E-01
NNE	3.5E-01	3.1E-01	8.6E-02	9.6E-02	1.1E-01	1.2E-01	1.1E-01

	Distance (m)						
Direction	1877	1905	2006	1988	1910	1711	1673
N	7.2E-02	7.0E-02	6.3E-02	6.4E-02	6.9E-02	8.5E-02	8.8E-02
NNW	4.7E-02	4.6E-02	4.2E-02	4.3E-02	4.6E-02	5.6E-02	5.8E-02
NW	4.8E-02	4.7E-02	4.2E-02	4.3E-02	4.6E-02	5.6E-02	5.9E-02
WNW	5.2E-02	5.1E-02	4.6E-02	4.7E-02	5.1E-02	6.2E-02	6.5E-02
W	8.3E-02	8.1E-02	7.3E-02	7.5E-02	8.0E-02	9.9E-02	1.0E-01
WSW	8.1E-02	7.9E-02	7.2E-02	7.3E-02	7.9E-02	9.5E-02	9.9E-02
SW	4.8E-02	4.7E-02	4.3E-02	4.4E-02	4.7E-02	5.6E-02	5.9E-02
SSW	4.2E-02	4.1E-02	3.7E-02	3.8E-02	4.1E-02	4.9E-02	5.1E-02
S	5.0E-02	4.9E-02	4.4E-02	4.5E-02	4.9E-02	5.9E-02	6.1E-02
SSE	9.8E-02	9.5E-02	8.6E-02	8.8E-02	9.5E-02	1.2E-01	1.2E-01
SE	1.6E-01	1.5E-01	1.4E-01	1.4E-01	1.5E-01	1.9E-01	2.0E-01
ESE	1.7E-01	1.6E-01	1.5E-01	1.5E-01	1.6E-01	2.0E-01	2.1E-01
E	1.9E-01	1.9E-01	1.7E-01	1.7E-01	1.9E-01	2.3E-01	2.4E-01
ENE	1.9E-01	1.8E-01	1.6E-01	1.7E-01	1.8E-01	2.2E-01	2.3E-01
NE	1.6E-01	1.6E-01	1.4E-01	1.5E-01	1.6E-01	1.9E-01	2.0E-01
NNE	1.0E-01	1.0E-01	9.1E-02	9.3E-02	1.0E-01	1.2E-01	1.3E-01

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	2087	1477	913	853	950	1007
N	5.9E-02	1.1E-01	2.7E-01	3.1E-01	2.5E-01	2.2E-01
NNW	4.0E-02	7.2E-02	1.7E-01	2.0E-01	1.6E-01	1.4E-01
NW	4.0E-02	7.3E-02	1.8E-01	2.0E-01	1.6E-01	1.5E-01
WNW	4.3E-02	8.1E-02	2.0E-01	2.3E-01	1.8E-01	1.6E-01
W	6.9E-02	1.3E-01	3.2E-01	3.6E-01	2.9E-01	2.6E-01
WSW	6.8E-02	1.2E-01	2.9E-01	3.3E-01	2.7E-01	2.4E-01
SW	4.0E-02	7.2E-02	1.7E-01	1.9E-01	1.6E-01	1.4E-01
SSW	3.5E-02	6.3E-02	1.5E-01	1.7E-01	1.4E-01	1.2E-01
S	4.2E-02	7.7E-02	1.9E-01	2.1E-01	1.7E-01	1.5E-01
SSE	8.0E-02	1.5E-01	3.9E-01	4.5E-01	3.6E-01	3.2E-01
SE	1.3E-01	2.5E-01	6.4E-01	7.4E-01	5.9E-01	5.2E-01
ESE	1.4E-01	2.7E-01	6.8E-01	7.9E-01	6.3E-01	5.6E-01
E	1.6E-01	3.1E-01	7.7E-01	8.9E-01	7.1E-01	6.3E-01
ENE	1.5E-01	2.9E-01	7.3E-01	8.4E-01	6.7E-01	6.0E-01
NE	1.3E-01	2.5E-01	6.3E-01	7.2E-01	5.8E-01	5.2E-01
NNE	8.5E-02	1.6E-01	3.9E-01	4.4E-01	3.6E-01	3.2E-01

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	964	1027	2082	1954	1773	1736	1838
N	3.1E-06	2.7E-06	7.3E-07	8.2E-07	9.9E-07	1.0E-06	9.2E-07
NNW	2.0E-06	1.7E-06	4.8E-07	5.4E-07	6.4E-07	6.7E-07	6.0E-07
NW	2.0E-06	1.8E-06	4.8E-07	5.4E-07	6.5E-07	6.7E-07	6.1E-07
WNW	2.3E-06	2.0E-06	5.3E-07	5.9E-07	7.2E-07	7.4E-07	6.7E-07
W	3.6E-06	3.2E-06	8.5E-07	9.6E-07	1.2E-06	1.2E-06	1.1E-06
WSW	3.3E-06	2.9E-06	8.4E-07	9.4E-07	1.1E-06	1.2E-06	1.0E-06
SW	1.9E-06	1.7E-06	4.9E-07	5.4E-07	6.5E-07	6.7E-07	6.1E-07
SSW	1.7E-06	1.5E-06	4.2E-07	4.7E-07	5.6E-07	5.8E-07	5.2E-07
S	2.1E-06	1.9E-06	5.0E-07	5.7E-07	6.8E-07	7.1E-07	6.4E-07
SSE	4.4E-06	3.9E-06	1.0E-06	1.1E-06	1.4E-06	1.4E-06	1.3E-06
SE	7.3E-06	6.4E-06	1.6E-06	1.8E-06	2.2E-06	2.3E-06	2.1E-06
ESE	7.8E-06	6.8E-06	1.7E-06	2.0E-06	2.4E-06	2.5E-06	2.2E-06
E	8.8E-06	7.8E-06	2.0E-06	2.3E-06	2.8E-06	2.9E-06	2.6E-06
ENE	8.3E-06	7.3E-06	1.9E-06	2.2E-06	2.6E-06	2.8E-06	2.5E-06
NE	7.2E-06	6.3E-06	1.7E-06	1.9E-06	2.3E-06	2.4E-06	2.1E-06
NNE	4.4E-06	3.9E-06	1.1E-06	1.2E-06	1.4E-06	1.5E-06	1.3E-06

	Distance (m)						
Direction	1877	1905	2006	1988	1910	1711	1673
N	8.9E-07	8.6E-07	7.8E-07	7.9E-07	8.6E-07	1.1E-06	1.1E-06
NNW	5.8E-07	5.6E-07	5.1E-07	5.2E-07	5.6E-07	6.8E-07	7.1E-07
NW	5.8E-07	5.7E-07	5.1E-07	5.2E-07	5.6E-07	6.9E-07	7.2E-07
WNW	6.4E-07	6.2E-07	5.6E-07	5.7E-07	6.2E-07	7.7E-07	8.0E-07
W	1.0E-06	1.0E-06	9.1E-07	9.2E-07	1.0E-06	1.2E-06	1.3E-06
WSW	1.0E-06	9.8E-07	8.9E-07	9.1E-07	9.8E-07	1.2E-06	1.2E-06
SW	5.9E-07	5.7E-07	5.2E-07	5.3E-07	5.7E-07	6.9E-07	7.2E-07
SSW	5.0E-07	4.9E-07	4.5E-07	4.5E-07	4.9E-07	6.0E-07	6.2E-07
S	6.1E-07	5.9E-07	5.4E-07	5.5E-07	5.9E-07	7.3E-07	7.6E-07
SSE	1.2E-06	1.2E-06	1.1E-06	1.1E-06	1.2E-06	1.5E-06	1.5E-06
SE	2.0E-06	1.9E-06	1.7E-06	1.8E-06	1.9E-06	2.4E-06	2.5E-06
ESE	2.1E-06	2.1E-06	1.9E-06	1.9E-06	2.1E-06	2.6E-06	2.7E-06
E	2.5E-06	2.4E-06	2.2E-06	2.2E-06	2.4E-06	2.9E-06	3.1E-06
ENE	2.4E-06	2.3E-06	2.1E-06	2.1E-06	2.3E-06	2.8E-06	2.9E-06
NE	2.1E-06	2.0E-06	1.8E-06	1.8E-06	2.0E-06	2.5E-06	2.6E-06
NNE	1.3E-06	1.3E-06	1.1E-06	1.2E-06	1.2E-06	1.5E-06	1.6E-06

000505

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	2087	1477	913	853	950	1007
N	7.3E-07	1.4E-06	3.4E-06	3.9E-06	3.2E-06	2.8E-06
NNW	4.8E-07	8.9E-07	2.2E-06	2.5E-06	2.0E-06	1.8E-06
NW	4.8E-07	9.0E-07	2.2E-06	2.6E-06	2.1E-06	1.8E-06
WNW	5.3E-07	1.0E-06	2.5E-06	2.9E-06	2.3E-06	2.1E-06
W	8.5E-07	1.6E-06	4.0E-06	4.6E-06	3.7E-06	3.3E-06
WSW	8.3E-07	1.5E-06	3.7E-06	4.2E-06	3.4E-06	3.0E-06
SW	4.9E-07	9.0E-07	2.1E-06	2.4E-06	2.0E-06	1.8E-06
SSW	4.2E-07	7.8E-07	1.9E-06	2.2E-06	1.7E-06	1.6E-06
S	5.0E-07	9.5E-07	2.4E-06	2.7E-06	2.2E-06	1.9E-06
SSE	1.0E-06	1.9E-06	5.0E-06	5.7E-06	4.6E-06	4.0E-06
SE	1.6E-06	3.2E-06	8.2E-06	9.5E-06	7.6E-06	6.7E-06
ESE	1.7E-06	3.4E-06	8.7E-06	1.0E-05	8.0E-06	7.1E-06
E	2.0E-06	3.9E-06	9.9E-06	1.1E-05	9.1E-06	8.1E-06
ENE	1.9E-06	3.7E-06	9.3E-06	1.1E-05	8.6E-06	7.6E-06
NE	1.7E-06	3.2E-06	8.0E-06	9.2E-06	7.4E-06	6.6E-06
NNE	1.1E-06	2.0E-06	4.9E-06	5.6E-06	4.5E-06	4.0E-06

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Apr 20, 1998 9:29 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

9.98E-01

At This Location: 805 Meters East

Source Category: REMEDIATION SITE
Source Type: Area
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
STOCKPILE W800057 [G2]

Dataset Name: 97-PILE1-G2
Dataset Date: Apr 20, 1998 9:17 am
Wind File: WNDFILES\97STAR.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 805 Meters East
Lifetime Fatal Cancer Risk: 1.28E-05

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	2.64E-03
BREAST	3.02E-03
R MAR	1.26E-01
LUNGS	7.60E+00
THYROID	2.57E-03
ENDOST	1.66E+00
RMNDR	6.60E-02
EFFEC	9.98E-01

RADIONUCLIDE EMISSIONS DURING THE YEAR 1997

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	1.00	8.3E-04	8.3E-04
U-235	Y	1.00	4.4E-05	4.4E-05
U-236	Y	1.00	3.2E-05	3.2E-05
U-238	Y	1.00	9.3E-04	9.3E-04
RA-226	W	1.00	5.9E-07	5.9E-07
RA-228	W	1.00	2.4E-06	2.4E-06
TH-228	Y	1.00	2.5E-05	2.5E-05
TH-230	Y	1.00	7.4E-05	7.4E-05
TH-232	Y	1.00	3.9E-06	3.9E-06
TH-234	Y	1.00	3.7E-03	3.7E-03

SITE INFORMATION

Temperature:	11 degrees C
Precipitation:	102 cm/y
Mixing Height:	950 m

SOURCE INFORMATION

Source Number: 1

Source Height (m): 1.00
Area (sq m): 2.85E+04

Plume Rise Pasquill Cat:	A	B	C	D	E	F	G
Zero:	0.00	0.00	0.00	0.00	0.00	0.00	0.00

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

805	1401	2593	1332	1847	2984	2242	1528	1483	1614
1670	1607	3043	1970	2096	2191	2161	2620	2651	1146

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Apr 20, 1998 9:29 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Area
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
STOCKPILE W800057 [G2]

Dataset Name: 97-PILE1-G2
Dataset Date: Apr 20, 1998 9:17 am
Wind File: WNDFILES\97STAR.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	2.64E-03
BREAST	3.02E-03
R MAR	1.26E-01
LUNGS	7.60E+00
THYROID	2.57E-03
ENDOST	1.66E+00
RMNDR	6.60E-02
EFFEC	9.98E-01

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	4.69E-02
INHALATION	9.50E-01
AIR IMMERSION	7.96E-08
GROUND SURFACE	5.40E-04
INTERNAL	9.97E-01
EXTERNAL	5.40E-04
TOTAL	9.98E-01

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	4.31E-01
U-235	2.16E-02
U-236	1.59E-02
U-238	4.29E-01
RA-226	3.83E-05
RA-228	5.97E-05
TH-228	2.38E-02
TH-230	6.99E-02
TH-232	5.36E-03
TH-234	1.03E-03
TOTAL	9.98E-01

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	1.22E-07
BONE	8.08E-08
THYROID	5.96E-10
BREAST	6.78E-09
LUNG	1.24E-05
STOMACH	4.47E-09
BOWEL	1.18E-08
LIVER	5.72E-09
PANCREAS	2.60E-09
URINARY	1.37E-07
OTHER	3.18E-09
TOTAL	1.28E-05

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	2.49E-07
INHALATION	1.25E-05
AIR IMMERSION	1.77E-12
GROUND SURFACE	1.24E-08
INTERNAL	1.28E-05
EXTERNAL	1.24E-08
TOTAL	1.28E-05

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	5.57E-06
U-235	2.85E-07
U-236	2.05E-07
U-238	5.59E-06
RA-226	5.36E-10
RA-228	6.33E-10
TH-228	4.77E-07
TH-230	5.74E-07
TH-232	3.02E-08
TH-234	3.46E-08
TOTAL	1.28E-05

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

Direction	Distance (m) 805	1401	2593	1332	1847	2984	2242
N	3.4E-01	1.2E-01	4.0E-02	1.3E-01	7.3E-02	3.2E-02	5.2E-02
NNW	2.2E-01	7.8E-02	2.7E-02	8.6E-02	4.8E-02	2.1E-02	3.4E-02
NW	2.3E-01	7.9E-02	2.7E-02	8.7E-02	4.8E-02	2.1E-02	3.4E-02
WNW	2.5E-01	8.8E-02	2.9E-02	9.7E-02	5.3E-02	2.3E-02	3.8E-02
W	4.1E-01	1.4E-01	4.6E-02	1.6E-01	8.5E-02	3.6E-02	6.0E-02
WSW	3.7E-01	1.3E-01	4.6E-02	1.5E-01	8.2E-02	3.7E-02	5.9E-02
SW	2.2E-01	7.8E-02	2.8E-02	8.6E-02	4.8E-02	2.2E-02	3.5E-02
SSW	1.9E-01	6.8E-02	2.4E-02	7.5E-02	4.2E-02	1.9E-02	3.0E-02
S	2.4E-01	8.4E-02	2.8E-02	9.2E-02	5.0E-02	2.2E-02	3.6E-02
SSE	5.0E-01	1.7E-01	5.4E-02	1.9E-01	1.0E-01	4.2E-02	7.0E-02
SE	8.3E-01	2.8E-01	8.6E-02	3.1E-01	1.6E-01	6.6E-02	1.1E-01
ESE	8.8E-01	3.0E-01	9.2E-02	3.3E-01	1.7E-01	7.1E-02	1.2E-01
E	1.0E+00	3.4E-01	1.1E-01	3.7E-01	2.0E-01	8.2E-02	1.4E-01
ENE	9.4E-01	3.2E-01	1.0E-01	3.6E-01	1.9E-01	8.0E-02	1.3E-01
NE	8.1E-01	2.8E-01	9.1E-02	3.1E-01	1.7E-01	7.1E-02	1.2E-01
NNE	4.9E-01	1.7E-01	5.8E-02	1.9E-01	1.1E-01	4.5E-02	7.5E-02

Direction	Distance (m) 1528	1483	1614	1670	1607	3043	1970
N	1.0E-01	1.1E-01	9.3E-02	8.7E-02	9.4E-02	3.1E-02	6.4E-02
NNW	6.7E-02	7.0E-02	6.1E-02	5.7E-02	6.1E-02	2.1E-02	4.2E-02
NW	6.8E-02	7.1E-02	6.1E-02	5.8E-02	6.2E-02	2.1E-02	4.3E-02
WNW	7.5E-02	7.9E-02	6.8E-02	6.4E-02	6.8E-02	2.2E-02	4.7E-02
W	1.2E-01	1.3E-01	1.1E-01	1.0E-01	1.1E-01	3.5E-02	7.5E-02
WSW	1.1E-01	1.2E-01	1.0E-01	9.8E-02	1.1E-01	3.6E-02	7.3E-02
SW	6.7E-02	7.1E-02	6.1E-02	5.8E-02	6.2E-02	2.1E-02	4.3E-02
SSW	5.8E-02	6.1E-02	5.3E-02	5.0E-02	5.3E-02	1.8E-02	3.7E-02
S	7.1E-02	7.5E-02	6.4E-02	6.1E-02	6.5E-02	2.2E-02	4.5E-02
SSE	1.4E-01	1.5E-01	1.3E-01	1.2E-01	1.3E-01	4.1E-02	8.8E-02
SE	2.3E-01	2.5E-01	2.1E-01	2.0E-01	2.1E-01	6.4E-02	1.4E-01
ESE	2.5E-01	2.6E-01	2.2E-01	2.1E-01	2.3E-01	6.8E-02	1.5E-01
E	2.9E-01	3.0E-01	2.6E-01	2.4E-01	2.6E-01	8.0E-02	1.8E-01
ENE	2.7E-01	2.9E-01	2.5E-01	2.3E-01	2.5E-01	7.8E-02	1.7E-01
NE	2.4E-01	2.5E-01	2.2E-01	2.0E-01	2.2E-01	6.9E-02	1.5E-01
NNE	1.5E-01	1.6E-01	1.3E-01	1.3E-01	1.4E-01	4.4E-02	9.3E-02

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	2096	2191	2161	2620	2651	1146
N	5.8E-02	5.4E-02	5.5E-02	4.0E-02	3.9E-02	1.7E-01
NNW	3.8E-02	3.5E-02	3.6E-02	2.6E-02	2.6E-02	1.1E-01
NW	3.8E-02	3.6E-02	3.7E-02	2.7E-02	2.6E-02	1.1E-01
WNW	4.2E-02	3.9E-02	4.0E-02	2.9E-02	2.8E-02	1.3E-01
W	6.7E-02	6.2E-02	6.4E-02	4.6E-02	4.5E-02	2.1E-01
WSW	6.6E-02	6.1E-02	6.3E-02	4.6E-02	4.5E-02	1.9E-01
SW	3.9E-02	3.6E-02	3.7E-02	2.7E-02	2.7E-02	1.1E-01
SSW	3.4E-02	3.1E-02	3.2E-02	2.3E-02	2.3E-02	9.8E-02
S	4.0E-02	3.7E-02	3.8E-02	2.8E-02	2.7E-02	1.2E-01
SSE	7.9E-02	7.3E-02	7.5E-02	5.3E-02	5.2E-02	2.5E-01
SE	1.3E-01	1.2E-01	1.2E-01	8.5E-02	8.3E-02	4.1E-01
ESE	1.4E-01	1.2E-01	1.3E-01	9.0E-02	8.8E-02	4.4E-01
E	1.6E-01	1.4E-01	1.5E-01	1.0E-01	1.0E-01	5.0E-01
ENE	1.5E-01	1.4E-01	1.4E-01	1.0E-01	1.0E-01	4.7E-01
NE	1.3E-01	1.2E-01	1.3E-01	8.9E-02	8.8E-02	4.1E-01
NNE	8.4E-02	7.8E-02	7.9E-02	5.7E-02	5.6E-02	2.5E-01

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m) 805	1401	2593	1332	1847	2984	2242
N	4.4E-06	1.5E-06	4.9E-07	1.7E-06	9.1E-07	3.8E-07	6.4E-07
NNW	2.8E-06	9.8E-07	3.2E-07	1.1E-06	5.9E-07	2.5E-07	4.2E-07
NW	2.9E-06	1.0E-06	3.2E-07	1.1E-06	5.9E-07	2.5E-07	4.2E-07
WNW	3.2E-06	1.1E-06	3.5E-07	1.2E-06	6.6E-07	2.7E-07	4.6E-07
W	5.2E-06	1.8E-06	5.7E-07	2.0E-06	1.1E-06	4.4E-07	7.4E-07
WSW	4.7E-06	1.7E-06	5.7E-07	1.9E-06	1.0E-06	4.5E-07	7.3E-07
SW	2.7E-06	9.8E-07	3.3E-07	1.1E-06	6.0E-07	2.6E-07	4.3E-07
SSW	2.4E-06	8.5E-07	2.8E-07	9.4E-07	5.1E-07	2.2E-07	3.6E-07
S	3.0E-06	1.0E-06	3.4E-07	1.2E-06	6.2E-07	2.6E-07	4.4E-07
SSE	6.4E-06	2.2E-06	6.7E-07	2.4E-06	1.3E-06	5.1E-07	8.7E-07
SE	1.1E-05	3.6E-06	1.1E-06	3.9E-06	2.1E-06	8.3E-07	1.4E-06
ESE	1.1E-05	3.8E-06	1.2E-06	4.2E-06	2.2E-06	8.8E-07	1.5E-06
E	1.3E-05	4.3E-06	1.3E-06	4.8E-06	2.5E-06	1.0E-06	1.8E-06
ENE	1.2E-05	4.1E-06	1.3E-06	4.5E-06	2.4E-06	1.0E-06	1.7E-06
NE	1.0E-05	3.6E-06	1.1E-06	3.9E-06	2.1E-06	8.8E-07	1.5E-06
NNE	6.3E-06	2.2E-06	7.2E-07	2.4E-06	1.3E-06	5.6E-07	9.3E-07

Direction	Distance (m) 1528	1483	1614	1670	1607	3043	1970
N	1.3E-06	1.4E-06	1.2E-06	1.1E-06	1.2E-06	3.7E-07	8.0E-07
NNW	8.3E-07	8.8E-07	7.5E-07	7.1E-07	7.6E-07	2.4E-07	5.2E-07
NW	8.4E-07	8.9E-07	7.6E-07	7.2E-07	7.7E-07	2.4E-07	5.3E-07
WNW	9.4E-07	9.9E-07	8.5E-07	7.9E-07	8.5E-07	2.7E-07	5.8E-07
W	1.5E-06	1.6E-06	1.4E-06	1.3E-06	1.4E-06	4.3E-07	9.3E-07
WSW	1.4E-06	1.5E-06	1.3E-06	1.2E-06	1.3E-06	4.3E-07	9.2E-07
SW	8.4E-07	8.8E-07	7.6E-07	7.2E-07	7.7E-07	2.5E-07	5.3E-07
SSW	7.2E-07	7.6E-07	6.6E-07	6.2E-07	6.6E-07	2.2E-07	4.6E-07
S	8.9E-07	9.4E-07	8.0E-07	7.5E-07	8.1E-07	2.6E-07	5.5E-07
SSE	1.8E-06	1.9E-06	1.6E-06	1.5E-06	1.7E-06	5.0E-07	1.1E-06
SE	3.0E-06	3.2E-06	2.7E-06	2.5E-06	2.7E-06	8.0E-07	1.8E-06
ESE	3.2E-06	3.4E-06	2.9E-06	2.7E-06	2.9E-06	8.5E-07	1.9E-06
E	3.6E-06	3.9E-06	3.3E-06	3.1E-06	3.3E-06	1.0E-06	2.2E-06
ENE	3.5E-06	3.7E-06	3.1E-06	3.0E-06	3.2E-06	9.7E-07	2.1E-06
NE	3.0E-06	3.2E-06	2.7E-06	2.6E-06	2.8E-06	8.5E-07	1.9E-06
NNE	1.9E-06	2.0E-06	1.7E-06	1.6E-06	1.7E-06	5.4E-07	1.2E-06

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	2096	2191	2161	2620	2651	1146
N	7.2E-07	6.6E-07	6.8E-07	4.8E-07	4.7E-07	2.2E-06
NNW	4.7E-07	4.3E-07	4.4E-07	3.2E-07	3.1E-07	1.4E-06
NW	4.7E-07	4.4E-07	4.5E-07	3.2E-07	3.1E-07	1.4E-06
WNW	5.2E-07	4.8E-07	4.9E-07	3.5E-07	3.4E-07	1.6E-06
W	8.4E-07	7.7E-07	7.9E-07	5.6E-07	5.5E-07	2.6E-06
WSW	8.2E-07	7.6E-07	7.8E-07	5.6E-07	5.5E-07	2.4E-06
SW	4.8E-07	4.4E-07	4.5E-07	3.3E-07	3.2E-07	1.4E-06
SSW	4.1E-07	3.8E-07	3.9E-07	2.8E-07	2.7E-07	1.2E-06
S	4.9E-07	4.6E-07	4.7E-07	3.3E-07	3.3E-07	1.5E-06
SSE	9.9E-07	9.1E-07	9.3E-07	6.6E-07	6.4E-07	3.2E-06
SE	1.6E-06	1.5E-06	1.5E-06	1.1E-06	1.0E-06	5.3E-06
ESE	1.7E-06	1.6E-06	1.6E-06	1.1E-06	1.1E-06	5.6E-06
E	2.0E-06	1.8E-06	1.9E-06	1.3E-06	1.3E-06	6.4E-06
ENE	1.9E-06	1.8E-06	1.8E-06	1.3E-06	1.3E-06	6.0E-06
NE	1.7E-06	1.5E-06	1.6E-06	1.1E-06	1.1E-06	5.2E-06
NNE	1.0E-06	9.7E-07	9.9E-07	7.1E-07	6.9E-07	3.2E-06

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Apr 20, 1998 9:30 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

9.24E-01

At This Location: 710 Meters East

Source Category: REMEDIATION SITE
Source Type: Area
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
STOCKPILE CON-017 [G1]

Dataset Name: 97-PILE2-G1
Dataset Date: Apr 20, 1998 9:20 am
Wind File: WNDFILES\97STAR.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 710 Meters East
Lifetime Fatal Cancer Risk: 1.18E-05

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	2.45E-03
BREAST	2.80E-03
R MAR	1.17E-01
LUNGS	7.04E+00
THYROID	2.38E-03
ENDOST	1.54E+00
RMNDR	6.13E-02
EFFEC	9.24E-01

RADIONUCLIDE EMISSIONS DURING THE YEAR 1997

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	1.00	5.9E-04	5.9E-04
U-235	Y	1.00	3.1E-05	3.1E-05
U-236	Y	1.00	2.3E-05	2.3E-05
U-238	Y	1.00	6.6E-04	6.6E-04
RA-226	W	1.00	4.2E-07	4.2E-07
RA-228	W	1.00	1.7E-06	1.7E-06
TH-228	Y	1.00	1.8E-05	1.8E-05
TH-230	Y	1.00	5.3E-05	5.3E-05
TH-232	Y	1.00	2.8E-06	2.8E-06
TH-234	Y	1.00	2.6E-03	2.6E-03

SITE INFORMATION

Temperature:	11 degrees C
Precipitation:	102 cm/y
Mixing Height:	950 m

SOURCE INFORMATION

Source Number: 1

Source Height (m): 1.00
Area (sq m): 2.04E+04

Plume Rise Pasquill Cat:	A	B	C	D	E	F	G
Zero:	0.00	0.00	0.00	0.00	0.00	0.00	0.00

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

795	710	1398	1133	930	1105	1411	1537	1578	1760
1769	1829	1782	1784	2397	1902	1581	1552	1680	1452

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Apr 20, 1998 9:30 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Area
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
STOCKPILE CON-017 [G1]

Dataset Name: 97-PILE2-G1
Dataset Date: Apr 20, 1998 9:20 am
Wind File: WNDFILES\97STAR.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	2.45E-03
BREAST	2.80E-03
R MAR	1.17E-01
LUNGS	7.04E+00
THYROID	2.38E-03
ENDOST	1.54E+00
RMNDR	6.13E-02
EFFEC	9.24E-01

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	4.36E-02
INHALATION	8.80E-01
AIR IMMERSION	7.38E-08
GROUND SURFACE	4.96E-04
INTERNAL	9.24E-01
EXTERNAL	4.96E-04
TOTAL	9.24E-01

Apr 20, 1998 9:30 am

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	3.99E-01
U-235	2.00E-02
U-236	1.47E-02
U-238	3.97E-01
RA-226	3.55E-05
RA-228	5.53E-05
TH-228	2.21E-02
TH-230	6.47E-02
TH-232	4.96E-03
TH-234	9.54E-04
TOTAL	9.24E-01

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	1.13E-07
BONE	7.49E-08
THYROID	5.51E-10
BREAST	6.26E-09
LUNG	1.15E-05
STOMACH	4.14E-09
BOWEL	1.09E-08
LIVER	5.30E-09
PANCREAS	2.41E-09
URINARY	1.27E-07
OTHER	2.94E-09
TOTAL	1.18E-05

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	2.31E-07
INHALATION	1.16E-05
AIR IMMERSION	1.64E-12
GROUND SURFACE	1.14E-08
INTERNAL	1.18E-05
EXTERNAL	1.14E-08
TOTAL	1.18E-05

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	5.16E-06
U-235	2.64E-07
U-236	1.90E-07
U-238	5.18E-06
RA-226	4.97E-10
RA-228	5.86E-10
TH-228	4.43E-07
TH-230	5.31E-07
TH-232	2.79E-08
TH-234	3.21E-08
TOTAL	1.18E-05

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	795	710	1398	1133	930	1105	1411
N	2.5E-01	3.2E-01	8.8E-02	1.3E-01	1.9E-01	1.3E-01	8.6E-02
NNW	1.6E-01	2.0E-01	5.7E-02	8.3E-02	1.2E-01	8.7E-02	5.6E-02
NW	1.7E-01	2.1E-01	5.8E-02	8.5E-02	1.2E-01	8.8E-02	5.7E-02
WNW	1.9E-01	2.4E-01	6.4E-02	9.5E-02	1.4E-01	9.9E-02	6.3E-02
W	3.0E-01	3.8E-01	1.0E-01	1.5E-01	2.2E-01	1.6E-01	1.0E-01
WSW	2.7E-01	3.4E-01	9.7E-02	1.4E-01	2.0E-01	1.5E-01	9.6E-02
SW	1.6E-01	2.0E-01	5.7E-02	8.2E-02	1.2E-01	8.6E-02	5.6E-02
SSW	1.4E-01	1.8E-01	5.0E-02	7.2E-02	1.0E-01	7.6E-02	4.9E-02
S	1.8E-01	2.2E-01	6.1E-02	8.9E-02	1.3E-01	9.3E-02	6.0E-02
SSE	3.7E-01	4.7E-01	1.2E-01	1.8E-01	2.7E-01	1.9E-01	1.2E-01
SE	6.1E-01	7.7E-01	2.0E-01	3.0E-01	4.4E-01	3.2E-01	2.0E-01
ESE	6.5E-01	8.2E-01	2.1E-01	3.2E-01	4.7E-01	3.4E-01	2.1E-01
E	7.3E-01	9.2E-01	2.4E-01	3.6E-01	5.3E-01	3.8E-01	2.4E-01
ENE	6.9E-01	8.7E-01	2.3E-01	3.4E-01	5.0E-01	3.6E-01	2.3E-01
NE	5.9E-01	7.5E-01	2.0E-01	3.0E-01	4.3E-01	3.1E-01	2.0E-01
NNE	3.6E-01	4.6E-01	1.3E-01	1.8E-01	2.7E-01	1.9E-01	1.2E-01

	Distance (m)						
Direction	1537	1578	1760	1769	1829	1782	1784
N	7.3E-02	7.0E-02	5.8E-02	5.7E-02	5.4E-02	5.7E-02	5.6E-02
NNW	4.8E-02	4.6E-02	3.8E-02	3.8E-02	3.6E-02	3.7E-02	3.7E-02
NW	4.9E-02	4.7E-02	3.9E-02	3.8E-02	3.6E-02	3.8E-02	3.8E-02
WNW	5.4E-02	5.1E-02	4.2E-02	4.2E-02	4.0E-02	4.1E-02	4.1E-02
W	8.6E-02	8.2E-02	6.7E-02	6.7E-02	6.3E-02	6.6E-02	6.6E-02
WSW	8.2E-02	7.8E-02	6.5E-02	6.5E-02	6.1E-02	6.4E-02	6.4E-02
SW	4.8E-02	4.6E-02	3.9E-02	3.8E-02	3.6E-02	3.8E-02	3.8E-02
SSW	4.2E-02	4.0E-02	3.4E-02	3.3E-02	3.1E-02	3.3E-02	3.3E-02
S	5.1E-02	4.9E-02	4.0E-02	4.0E-02	3.8E-02	4.0E-02	3.9E-02
SSE	1.0E-01	9.8E-02	8.0E-02	7.9E-02	7.4E-02	7.8E-02	7.8E-02
SE	1.7E-01	1.6E-01	1.3E-01	1.3E-01	1.2E-01	1.3E-01	1.3E-01
ESE	1.8E-01	1.7E-01	1.4E-01	1.4E-01	1.3E-01	1.3E-01	1.3E-01
E	2.0E-01	1.9E-01	1.6E-01	1.6E-01	1.5E-01	1.5E-01	1.5E-01
ENE	1.9E-01	1.9E-01	1.5E-01	1.5E-01	1.4E-01	1.5E-01	1.5E-01
NE	1.7E-01	1.6E-01	1.3E-01	1.3E-01	1.2E-01	1.3E-01	1.3E-01
NNE	1.1E-01	1.0E-01	8.3E-02	8.2E-02	7.8E-02	8.1E-02	8.1E-02

000529

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	2397	1902	1581	1552	1680	1452
N	3.4E-02	5.0E-02	7.0E-02	7.2E-02	6.3E-02	8.2E-02
NNW	2.3E-02	3.3E-02	4.6E-02	4.7E-02	4.1E-02	5.3E-02
NW	2.3E-02	3.4E-02	4.6E-02	4.8E-02	4.2E-02	5.4E-02
WNW	2.5E-02	3.7E-02	5.1E-02	5.3E-02	4.6E-02	6.0E-02
W	3.9E-02	5.8E-02	8.1E-02	8.4E-02	7.3E-02	9.5E-02
WSW	3.9E-02	5.7E-02	7.8E-02	8.1E-02	7.1E-02	9.1E-02
SW	2.3E-02	3.4E-02	4.6E-02	4.8E-02	4.2E-02	5.4E-02
SSW	2.0E-02	2.9E-02	4.0E-02	4.2E-02	3.6E-02	4.7E-02
S	2.4E-02	3.5E-02	4.9E-02	5.0E-02	4.4E-02	5.7E-02
SSE	4.5E-02	6.9E-02	9.7E-02	1.0E-01	8.7E-02	1.1E-01
SE	7.2E-02	1.1E-01	1.6E-01	1.6E-01	1.4E-01	1.9E-01
ESE	7.7E-02	1.2E-01	1.7E-01	1.7E-01	1.5E-01	2.0E-01
E	8.9E-02	1.4E-01	1.9E-01	2.0E-01	1.7E-01	2.3E-01
ENE	8.7E-02	1.3E-01	1.8E-01	1.9E-01	1.7E-01	2.2E-01
NE	7.6E-02	1.1E-01	1.6E-01	1.7E-01	1.4E-01	1.9E-01
NNE	4.9E-02	7.2E-02	1.0E-01	1.0E-01	9.0E-02	1.2E-01

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m) 795	710	1398	1133	930	1105	1411
N	3.2E-06	4.1E-06	1.1E-06	1.6E-06	2.4E-06	1.7E-06	1.1E-06
NNW	2.1E-06	2.6E-06	7.1E-07	1.0E-06	1.5E-06	1.1E-06	7.0E-07
NW	2.1E-06	2.7E-06	7.2E-07	1.1E-06	1.5E-06	1.1E-06	7.1E-07
WNW	2.4E-06	3.0E-06	8.0E-07	1.2E-06	1.7E-06	1.2E-06	7.9E-07
W	3.8E-06	4.8E-06	1.3E-06	1.9E-06	2.8E-06	2.0E-06	1.3E-06
WSW	3.5E-06	4.3E-06	1.2E-06	1.8E-06	2.5E-06	1.9E-06	1.2E-06
SW	2.0E-06	2.5E-06	7.1E-07	1.0E-06	1.5E-06	1.1E-06	7.0E-07
SSW	1.8E-06	2.2E-06	6.2E-07	9.0E-07	1.3E-06	9.4E-07	6.1E-07
S	2.2E-06	2.8E-06	7.6E-07	1.1E-06	1.6E-06	1.2E-06	7.4E-07
SSE	4.7E-06	6.0E-06	1.6E-06	2.3E-06	3.4E-06	2.4E-06	1.5E-06
SE	7.8E-06	9.9E-06	2.6E-06	3.8E-06	5.7E-06	4.0E-06	2.5E-06
ESE	8.3E-06	1.0E-05	2.7E-06	4.1E-06	6.0E-06	4.3E-06	2.7E-06
E	9.4E-06	1.2E-05	3.1E-06	4.6E-06	6.8E-06	4.9E-06	3.1E-06
ENE	8.8E-06	1.1E-05	3.0E-06	4.4E-06	6.4E-06	4.6E-06	2.9E-06
NE	7.6E-06	9.5E-06	2.6E-06	3.8E-06	5.5E-06	4.0E-06	2.5E-06
NNE	4.6E-06	5.8E-06	1.6E-06	2.3E-06	3.4E-06	2.4E-06	1.6E-06

Direction	Distance (m) 1537	1578	1760	1769	1829	1782	1784
N	9.2E-07	8.7E-07	7.2E-07	7.1E-07	6.7E-07	7.0E-07	7.0E-07
NNW	5.9E-07	5.7E-07	4.7E-07	4.6E-07	4.3E-07	4.6E-07	4.5E-07
NW	6.0E-07	5.7E-07	4.7E-07	4.7E-07	4.4E-07	4.6E-07	4.6E-07
WNW	6.7E-07	6.4E-07	5.2E-07	5.1E-07	4.8E-07	5.1E-07	5.1E-07
W	1.1E-06	1.0E-06	8.4E-07	8.3E-07	7.8E-07	8.2E-07	8.2E-07
WSW	1.0E-06	9.8E-07	8.1E-07	8.0E-07	7.5E-07	7.9E-07	7.9E-07
SW	6.0E-07	5.7E-07	4.7E-07	4.7E-07	4.4E-07	4.6E-07	4.6E-07
SSW	5.2E-07	4.9E-07	4.1E-07	4.0E-07	3.8E-07	4.0E-07	4.0E-07
S	6.3E-07	6.0E-07	4.9E-07	4.9E-07	4.6E-07	4.8E-07	4.8E-07
SSE	1.3E-06	1.2E-06	1.0E-06	9.9E-07	9.2E-07	9.7E-07	9.7E-07
SE	2.1E-06	2.0E-06	1.6E-06	1.6E-06	1.5E-06	1.6E-06	1.6E-06
ESE	2.2E-06	2.1E-06	1.7E-06	1.7E-06	1.6E-06	1.7E-06	1.7E-06
E	2.6E-06	2.5E-06	2.0E-06	2.0E-06	1.9E-06	1.9E-06	1.9E-06
ENE	2.5E-06	2.3E-06	1.9E-06	1.9E-06	1.8E-06	1.9E-06	1.9E-06
NE	2.1E-06	2.0E-06	1.7E-06	1.7E-06	1.5E-06	1.6E-06	1.6E-06
NNE	1.3E-06	1.3E-06	1.0E-06	1.0E-06	9.7E-07	1.0E-06	1.0E-06

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	2397	1902	1581	1552	1680	1452
N	4.1E-07	6.2E-07	8.7E-07	9.0E-07	7.8E-07	1.0E-06
NNW	2.7E-07	4.0E-07	5.7E-07	5.8E-07	5.1E-07	6.6E-07
NW	2.7E-07	4.1E-07	5.7E-07	5.9E-07	5.1E-07	6.7E-07
WNW	3.0E-07	4.5E-07	6.3E-07	6.6E-07	5.7E-07	7.4E-07
W	4.8E-07	7.2E-07	1.0E-06	1.1E-06	9.1E-07	1.2E-06
WSW	4.7E-07	7.0E-07	9.8E-07	1.0E-06	8.8E-07	1.1E-06
SW	2.8E-07	4.1E-07	5.7E-07	5.9E-07	5.1E-07	6.6E-07
SSW	2.4E-07	3.5E-07	4.9E-07	5.1E-07	4.4E-07	5.7E-07
S	2.8E-07	4.3E-07	6.0E-07	6.2E-07	5.4E-07	7.0E-07
SSE	5.6E-07	8.5E-07	1.2E-06	1.3E-06	1.1E-06	1.4E-06
SE	9.0E-07	1.4E-06	2.0E-06	2.1E-06	1.8E-06	2.4E-06
ESE	9.6E-07	1.5E-06	2.1E-06	2.2E-06	1.9E-06	2.5E-06
E	1.1E-06	1.7E-06	2.4E-06	2.5E-06	2.2E-06	2.9E-06
ENE	1.1E-06	1.7E-06	2.3E-06	2.4E-06	2.1E-06	2.7E-06
NE	9.5E-07	1.4E-06	2.0E-06	2.1E-06	1.8E-06	2.4E-06
NNE	6.0E-07	9.0E-07	1.3E-06	1.3E-06	1.1E-06	1.5E-06

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Apr 20, 1998 9:31 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

5.65E-01

At This Location: 903 Meters East

Source Category: REMEDIATION SITE
Source Type: Area
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
STOCKPILE CON-017 [G2]

Dataset Name: 97-PILE2-G2
Dataset Date: Apr 20, 1998 9:21 am
Wind File: WNDFILES\97STAR.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 903 Meters East
Lifetime Fatal Cancer Risk: 7.22E-06

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	1.53E-03
BREAST	1.75E-03
R MAR	7.23E-02
LUNGS	4.30E+00
THYROID	1.49E-03
ENDOST	9.51E-01
RMNDR	3.85E-02
EFFEC	5.65E-01

RADIONUCLIDE EMISSIONS DURING THE YEAR 1997

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	1.00	5.9E-04	5.9E-04
U-235	Y	1.00	3.1E-05	3.1E-05
U-236	Y	1.00	2.3E-05	2.3E-05
U-238	Y	1.00	6.6E-04	6.6E-04
RA-226	W	1.00	4.2E-07	4.2E-07
RA-228	W	1.00	1.7E-06	1.7E-06
TH-228	Y	1.00	1.8E-05	1.8E-05
TH-230	Y	1.00	5.3E-05	5.3E-05
TH-232	Y	1.00	2.8E-06	2.8E-06
TH-234	Y	1.00	2.6E-03	2.6E-03

SITE INFORMATION.

Temperature: 11 degrees C
Precipitation: 102 cm/y
Mixing Height: 950 m

SOURCE INFORMATION

Source Number: 1

Source Height (m): 1.00
Area (sq m): 2.04E+04

Plume Rise Pasquill Cat:	A	B	C	D	E	F	G
Zero:	0.00	0.00	0.00	0.00	0.00	0.00	0.00

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

903	1003	1754	2158	2675	2200	2798	1089	1971	2454
2507	1154	2256	1156	1392	1486	1444	2030	2055	1531

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Apr 20, 1998 9:31 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Area
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
STOCKPILE CON-017 [G2]

Dataset Name: 97-PILE2-G2
Dataset Date: Apr 20, 1998 9:21 am
Wind File: WNDFILES\97STAR.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	1.53E-03
BREAST	1.75E-03
R MAR	7.23E-02
LUNGS	4.30E+00
THYROID	1.49E-03
ENDOST	9.51E-01
RMNDR	3.85E-02
EFFEC	5.65E-01

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	2.74E-02
INHALATION	5.37E-01
AIR IMMERSION	4.50E-08
GROUND SURFACE	3.08E-04
INTERNAL	5.65E-01
EXTERNAL	3.08E-04
TOTAL	5.65E-01

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	2.44E-01
U-235	1.22E-02
U-236	8.97E-03
U-238	2.43E-01
RA-226	2.20E-05
RA-228	3.44E-05
TH-228	1.35E-02
TH-230	3.95E-02
TH-232	3.03E-03
TH-234	5.91E-04
TOTAL	5.65E-01

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	7.01E-08
BONE	4.64E-08
THYROID	3.44E-10
BREAST	3.90E-09
LUNG	7.01E-06
STOMACH	2.59E-09
BOWEL	6.84E-09
LIVER	3.28E-09
PANCREAS	1.50E-09
URINARY	7.98E-08
OTHER	1.84E-09
TOTAL	7.22E-06

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	1.45E-07
INHALATION	7.07E-06
AIR IMMERSION	1.00E-12
GROUND SURFACE	7.08E-09
INTERNAL	7.22E-06
EXTERNAL	7.08E-09
TOTAL	7.22E-06

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	3.15E-06
U-235	1.61E-07
U-236	1.16E-07
U-238	3.16E-06
RA-226	3.05E-10
RA-228	3.62E-10
TH-228	2.70E-07
TH-230	3.24E-07
TH-232	1.71E-08
TH-234	1.97E-08
TOTAL	7.22E-06

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	903	1003	1754	2158	2675	2200	2798
N	2.0E-01	1.6E-01	5.7E-02	4.0E-02	2.8E-02	3.8E-02	2.6E-02
NNW	1.3E-01	1.0E-01	3.8E-02	2.6E-02	1.9E-02	2.5E-02	1.7E-02
NW	1.3E-01	1.0E-01	3.8E-02	2.6E-02	1.9E-02	2.6E-02	1.7E-02
WNW	1.4E-01	1.2E-01	4.2E-02	2.9E-02	2.0E-02	2.8E-02	1.9E-02
W	2.3E-01	1.9E-01	6.7E-02	4.6E-02	3.2E-02	4.4E-02	2.9E-02
WSW	2.1E-01	1.7E-01	6.5E-02	4.5E-02	3.2E-02	4.4E-02	2.9E-02
SW	1.2E-01	1.0E-01	3.8E-02	2.7E-02	1.9E-02	2.6E-02	1.8E-02
SSW	1.1E-01	8.9E-02	3.3E-02	2.3E-02	1.6E-02	2.2E-02	1.5E-02
S	1.4E-01	1.1E-01	4.0E-02	2.8E-02	1.9E-02	2.7E-02	1.8E-02
SSE	2.8E-01	2.3E-01	7.9E-02	5.4E-02	3.7E-02	5.2E-02	3.4E-02
SE	4.7E-01	3.8E-01	1.3E-01	8.6E-02	5.8E-02	8.3E-02	5.4E-02
ESE	5.0E-01	4.0E-01	1.4E-01	9.2E-02	6.2E-02	8.9E-02	5.7E-02
E	5.6E-01	4.5E-01	1.6E-01	1.1E-01	7.2E-02	1.0E-01	6.7E-02
ENE	5.3E-01	4.3E-01	1.5E-01	1.0E-01	7.1E-02	1.0E-01	6.5E-02
NE	4.6E-01	3.7E-01	1.3E-01	9.0E-02	6.2E-02	8.7E-02	5.7E-02
NNE	2.8E-01	2.3E-01	8.3E-02	5.7E-02	4.0E-02	5.5E-02	3.7E-02

	Distance (m)						
Direction	1089	1971	2454	2507	1154	2256	1156
N	1.4E-01	4.6E-02	3.2E-02	3.1E-02	1.2E-01	3.7E-02	1.2E-01
NNW	8.9E-02	3.1E-02	2.1E-02	2.1E-02	8.0E-02	2.4E-02	8.0E-02
NW	9.0E-02	3.1E-02	2.1E-02	2.1E-02	8.1E-02	2.5E-02	8.1E-02
WNW	1.0E-01	3.4E-02	2.3E-02	2.3E-02	9.1E-02	2.7E-02	9.1E-02
W	1.6E-01	5.4E-02	3.7E-02	3.5E-02	1.5E-01	4.2E-02	1.5E-01
WSW	1.5E-01	5.3E-02	3.7E-02	3.5E-02	1.4E-01	4.2E-02	1.3E-01
SW	8.7E-02	3.1E-02	2.2E-02	2.1E-02	7.9E-02	2.5E-02	7.9E-02
SSW	7.7E-02	2.7E-02	1.9E-02	1.8E-02	6.9E-02	2.2E-02	6.9E-02
S	9.5E-02	3.2E-02	2.2E-02	2.2E-02	8.6E-02	2.6E-02	8.5E-02
SSE	2.0E-01	6.3E-02	4.3E-02	4.1E-02	1.8E-01	5.0E-02	1.8E-01
SE	3.2E-01	1.0E-01	6.8E-02	6.6E-02	2.9E-01	8.0E-02	2.9E-01
ESE	3.4E-01	1.1E-01	7.3E-02	7.0E-02	3.1E-01	8.5E-02	3.1E-01
E	3.9E-01	1.3E-01	8.5E-02	8.2E-02	3.5E-01	9.9E-02	3.5E-01
ENE	3.7E-01	1.2E-01	8.2E-02	7.9E-02	3.3E-01	9.6E-02	3.3E-01
NE	3.2E-01	1.1E-01	7.2E-02	6.9E-02	2.9E-01	8.4E-02	2.9E-01
NNE	2.0E-01	6.7E-02	4.6E-02	4.4E-02	1.8E-01	5.3E-02	1.8E-01

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1392	1486	1444	2030	2055	1531
N	8.8E-02	7.7E-02	8.2E-02	4.4E-02	4.3E-02	7.3E-02
NNW	5.7E-02	5.0E-02	5.3E-02	2.9E-02	2.8E-02	4.8E-02
NW	5.8E-02	5.1E-02	5.4E-02	2.9E-02	2.9E-02	4.8E-02
WNW	6.4E-02	5.7E-02	6.0E-02	3.2E-02	3.1E-02	5.4E-02
W	1.0E-01	9.0E-02	9.6E-02	5.1E-02	5.0E-02	8.6E-02
WSW	9.7E-02	8.6E-02	9.1E-02	5.0E-02	4.9E-02	8.2E-02
SW	5.7E-02	5.1E-02	5.3E-02	3.0E-02	2.9E-02	4.8E-02
SSW	5.0E-02	4.4E-02	4.6E-02	2.6E-02	2.5E-02	4.2E-02
S	6.1E-02	5.4E-02	5.7E-02	3.1E-02	3.0E-02	5.1E-02
SSE	1.2E-01	1.1E-01	1.1E-01	6.0E-02	5.9E-02	1.0E-01
SE	2.0E-01	1.8E-01	1.9E-01	9.6E-02	9.4E-02	1.7E-01
ESE	2.1E-01	1.9E-01	2.0E-01	1.0E-01	1.0E-01	1.8E-01
E	2.5E-01	2.2E-01	2.3E-01	1.2E-01	1.2E-01	2.0E-01
ENE	2.3E-01	2.1E-01	2.2E-01	1.1E-01	1.1E-01	2.0E-01
NE	2.0E-01	1.8E-01	1.9E-01	1.0E-01	9.8E-02	1.7E-01
NNE	1.3E-01	1.1E-01	1.2E-01	6.3E-02	6.2E-02	1.1E-01

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m) 903	1003	1754	2158	2675	2200	2798
N	2.5E-06	2.0E-06	7.2E-07	4.9E-07	3.4E-07	4.7E-07	3.1E-07
NNW	1.6E-06	1.3E-06	4.6E-07	3.2E-07	2.2E-07	3.1E-07	2.0E-07
NW	1.6E-06	1.3E-06	4.7E-07	3.2E-07	2.2E-07	3.1E-07	2.0E-07
WNW	1.8E-06	1.5E-06	5.2E-07	3.5E-07	2.4E-07	3.4E-07	2.2E-07
W	3.0E-06	2.4E-06	8.4E-07	5.7E-07	3.9E-07	5.5E-07	3.6E-07
WSW	2.7E-06	2.2E-06	8.1E-07	5.6E-07	3.9E-07	5.4E-07	3.6E-07
SW	1.6E-06	1.3E-06	4.7E-07	3.3E-07	2.3E-07	3.2E-07	2.1E-07
SSW	1.4E-06	1.1E-06	4.0E-07	2.8E-07	1.9E-07	2.7E-07	1.8E-07
S	1.7E-06	1.4E-06	4.9E-07	3.4E-07	2.3E-07	3.3E-07	2.1E-07
SSE	3.6E-06	2.9E-06	1.0E-06	6.7E-07	4.5E-07	6.5E-07	4.2E-07
SE	6.0E-06	4.8E-06	1.6E-06	1.1E-06	7.3E-07	1.0E-06	6.7E-07
ESE	6.4E-06	5.1E-06	1.7E-06	1.2E-06	7.8E-07	1.1E-06	7.2E-07
E	7.2E-06	5.8E-06	2.0E-06	1.3E-06	9.1E-07	1.3E-06	8.4E-07
ENE	6.8E-06	5.5E-06	1.9E-06	1.3E-06	8.8E-07	1.3E-06	8.1E-07
NE	5.9E-06	4.7E-06	1.7E-06	1.1E-06	7.7E-07	1.1E-06	7.1E-07
NNE	3.6E-06	2.9E-06	1.0E-06	7.1E-07	4.9E-07	6.9E-07	4.5E-07

Direction	Distance (m) 1089	1971	2454	2507	1154	2256	1156
N	1.7E-06	5.7E-07	3.9E-07	3.8E-07	1.6E-06	4.5E-07	1.6E-06
NNW	1.1E-06	3.7E-07	2.6E-07	2.5E-07	1.0E-06	3.0E-07	1.0E-06
NW	1.1E-06	3.8E-07	2.6E-07	2.5E-07	1.0E-06	3.0E-07	1.0E-06
WNW	1.3E-06	4.1E-07	2.8E-07	2.7E-07	1.1E-06	3.3E-07	1.1E-06
W	2.1E-06	6.7E-07	4.5E-07	4.4E-07	1.8E-06	5.3E-07	1.8E-06
WSW	1.9E-06	6.6E-07	4.5E-07	4.3E-07	1.7E-06	5.2E-07	1.7E-06
SW	1.1E-06	3.8E-07	2.6E-07	2.5E-07	9.9E-07	3.0E-07	9.9E-07
SSW	9.7E-07	3.3E-07	2.2E-07	2.2E-07	8.7E-07	2.6E-07	8.7E-07
S	1.2E-06	3.9E-07	2.7E-07	2.6E-07	1.1E-06	3.1E-07	1.1E-06
SSE	2.5E-06	7.9E-07	5.3E-07	5.1E-07	2.2E-06	6.2E-07	2.2E-06
SE	4.1E-06	1.3E-06	8.6E-07	8.3E-07	3.7E-06	1.0E-06	3.7E-06
ESE	4.4E-06	1.4E-06	9.2E-07	8.8E-07	3.9E-06	1.1E-06	3.9E-06
E	5.0E-06	1.6E-06	1.1E-06	1.0E-06	4.5E-06	1.2E-06	4.5E-06
ENE	4.7E-06	1.5E-06	1.0E-06	1.0E-06	4.2E-06	1.2E-06	4.2E-06
NE	4.1E-06	1.3E-06	9.0E-07	8.7E-07	3.7E-06	1.1E-06	3.7E-06
NNE	2.5E-06	8.4E-07	5.7E-07	5.5E-07	2.3E-06	6.6E-07	2.3E-06

000544

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1392	1486	1444	2030	2055	1531
N	1.1E-06	9.7E-07	1.0E-06	5.4E-07	5.3E-07	9.2E-07
NNW	7.1E-07	6.3E-07	6.6E-07	3.5E-07	3.5E-07	5.9E-07
NW	7.2E-07	6.4E-07	6.7E-07	3.6E-07	3.5E-07	6.0E-07
WNW	8.0E-07	7.1E-07	7.5E-07	3.9E-07	3.8E-07	6.7E-07
W	1.3E-06	1.1E-06	1.2E-06	6.3E-07	6.2E-07	1.1E-06
WSW	1.2E-06	1.1E-06	1.1E-06	6.2E-07	6.1E-07	1.0E-06
SW	7.1E-07	6.3E-07	6.6E-07	3.6E-07	3.5E-07	6.0E-07
SSW	6.2E-07	5.5E-07	5.8E-07	3.1E-07	3.0E-07	5.2E-07
S	7.6E-07	6.7E-07	7.1E-07	3.7E-07	3.7E-07	6.3E-07
SSE	1.6E-06	1.4E-06	1.5E-06	7.5E-07	7.3E-07	1.3E-06
SE	2.6E-06	2.2E-06	2.4E-06	1.2E-06	1.2E-06	2.1E-06
ESE	2.7E-06	2.4E-06	2.5E-06	1.3E-06	1.3E-06	2.3E-06
E	3.1E-06	2.7E-06	2.9E-06	1.5E-06	1.5E-06	2.6E-06
ENE	3.0E-06	2.6E-06	2.8E-06	1.5E-06	1.4E-06	2.5E-06
NE	2.6E-06	2.3E-06	2.4E-06	1.3E-06	1.2E-06	2.2E-06
NNE	1.6E-06	1.4E-06	1.5E-06	7.9E-07	7.8E-07	1.3E-06

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Apr 20, 1998 9:32 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

1.83E+00

At This Location: 472 Meters East

Source Category: REMEDIATION SITE
Source Type: Area
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
STOCKPILE SWU-004/FLYASH [G1]

Dataset Name: 97-PILE3-G1
Dataset Date: Apr 20, 1998 9:24 am
Wind File: WNDFILES\97STAR.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 472 Meters East
Lifetime Fatal Cancer Risk: 2.34E-05

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	4.81E-03
BREAST	5.48E-03
R MAR	2.31E-01
LUNGS	1.40E+01
THYROID	4.68E-03
ENDOST	3.04E+00
RMNDR	1.20E-01
EFFEC	1.83E+00

RADIONUCLIDE EMISSIONS DURING THE YEAR 1997

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	1.00	5.2E-04	5.2E-04
U-235	Y	1.00	2.7E-05	2.7E-05
U-236	Y	1.00	2.0E-05	2.0E-05
U-238	Y	1.00	5.8E-04	5.8E-04
RA-226	W	1.00	3.7E-07	3.7E-07
RA-228	W	1.00	1.5E-06	1.5E-06
TH-228	Y	1.00	1.5E-05	1.5E-05
TH-230	Y	1.00	4.6E-05	4.6E-05
TH-232	Y	1.00	2.4E-06	2.4E-06
TH-234	Y	1.00	2.3E-03	2.3E-03

SITE INFORMATION

Temperature: 11 degrees C
Precipitation: 102 cm/y
Mixing Height: 950 m

SOURCE INFORMATION

Source Number: 1

Source Height (m): 1.00
Area (sq m): 2.85E+04

Plume Rise Pasquill Cat:	A	B	C	D	E	F	G
Zero:	0.00	0.00	0.00	0.00	0.00	0.00	0.00

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

2032	1976	2526	2019	1652	864	546	472	485	551
536	551	597	642	1352	1143	1386	1431	2370	2439

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Apr 20, 1998 9:32 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Area
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
STOCKPILE SWU-004/FLYASH [G1]

Dataset Name: 97-PILE3-G1
Dataset Date: Apr 20, 1998 9:24 am
Wind File: WNDFILES\97STAR.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	4.81E-03
BREAST	5.48E-03
R MAR	2.31E-01
LUNGS	1.40E+01
THYROID	4.68E-03
ENDOST	3.04E+00
RMNDR	1.20E-01
EFFEC	1.83E+00

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	8.56E-02
INHALATION	1.75E+00
AIR IMMERSION	1.46E-07
GROUND SURFACE	9.65E-04
INTERNAL	1.83E+00
EXTERNAL	9.65E-04
TOTAL	1.83E+00

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	7.91E-01
U-235	3.97E-02
U-236	2.91E-02
U-238	7.88E-01
RA-226	7.00E-05
RA-228	1.09E-04
TH-228	4.38E-02
TH-230	1.28E-01
TH-232	9.81E-03
TH-234	1.88E-03
TOTAL	1.83E+00

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	2.24E-07
BONE	1.48E-07
THYROID	1.08E-09
BREAST	1.22E-08
LUNG	2.28E-05
STOMACH	8.13E-09
BOWEL	2.15E-08
LIVER	1.04E-08
PANCREAS	4.72E-09
URINARY	2.49E-07
OTHER	5.77E-09
TOTAL	2.34E-05

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	4.54E-07
INHALATION	2.30E-05
AIR IMMERSION	3.26E-12
GROUND SURFACE	2.22E-08
INTERNAL	2.34E-05
EXTERNAL	2.22E-08
TOTAL	2.34E-05

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	1.02E-05
U-235	5.23E-07
U-236	3.76E-07
U-238	1.03E-05
RA-226	9.83E-10
RA-228	1.16E-09
TH-228	8.79E-07
TH-230	1.05E-06
TH-232	5.53E-08
TH-234	6.36E-08
TOTAL	2.34E-05

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

Direction	Distance (m) 2032	1976	2526	2019	1652	864	546
N	4.3E-02	4.5E-02	3.1E-02	4.3E-02	6.0E-02	1.9E-01	4.7E-01
NNW	3.0E-02	3.1E-02	2.2E-02	3.0E-02	4.1E-02	1.2E-01	3.0E-01
NW	3.0E-02	3.1E-02	2.3E-02	3.0E-02	4.2E-02	1.3E-01	3.1E-01
WNW	3.3E-02	3.4E-02	2.4E-02	3.3E-02	4.5E-02	1.4E-01	3.5E-01
W	4.9E-02	5.1E-02	3.5E-02	4.9E-02	6.9E-02	2.2E-01	5.6E-01
WSW	4.8E-02	5.0E-02	3.5E-02	4.9E-02	6.7E-02	2.0E-01	4.9E-01
SW	3.1E-02	3.2E-02	2.3E-02	3.1E-02	4.1E-02	1.2E-01	2.9E-01
SSW	2.7E-02	2.8E-02	2.1E-02	2.7E-02	3.7E-02	1.1E-01	2.6E-01
S	3.1E-02	3.3E-02	2.3E-02	3.2E-02	4.3E-02	1.3E-01	3.3E-01
SSE	5.7E-02	5.9E-02	4.0E-02	5.7E-02	8.2E-02	2.7E-01	6.9E-01
SE	8.8E-02	9.3E-02	6.1E-02	8.9E-02	1.3E-01	4.5E-01	1.1E+00
ESE	9.3E-02	9.8E-02	6.5E-02	9.4E-02	1.4E-01	4.8E-01	1.2E+00
E	1.1E-01	1.1E-01	7.5E-02	1.1E-01	1.6E-01	5.4E-01	1.4E+00
ENE	1.0E-01	1.1E-01	7.3E-02	1.1E-01	1.5E-01	5.1E-01	1.3E+00
NE	9.2E-02	9.6E-02	6.4E-02	9.3E-02	1.3E-01	4.4E-01	1.1E+00
NNE	6.0E-02	6.2E-02	4.3E-02	6.0E-02	8.5E-02	2.7E-01	6.7E-01

Direction	Distance (m) 472	485	551	536	551	597	642
N	6.3E-01	5.9E-01	4.6E-01	4.9E-01	4.6E-01	3.9E-01	3.4E-01
NNW	4.0E-01	3.8E-01	3.0E-01	3.1E-01	3.0E-01	2.5E-01	2.2E-01
NW	4.1E-01	3.9E-01	3.0E-01	3.2E-01	3.0E-01	2.6E-01	2.3E-01
WNW	4.7E-01	4.4E-01	3.4E-01	3.6E-01	3.4E-01	2.9E-01	2.5E-01
W	7.4E-01	7.0E-01	5.5E-01	5.8E-01	5.5E-01	4.7E-01	4.0E-01
WSW	6.5E-01	6.2E-01	4.8E-01	5.1E-01	4.8E-01	4.1E-01	3.6E-01
SW	3.8E-01	3.6E-01	2.8E-01	3.0E-01	2.8E-01	2.4E-01	2.1E-01
SSW	3.4E-01	3.2E-01	2.5E-01	2.7E-01	2.5E-01	2.2E-01	1.9E-01
S	4.3E-01	4.1E-01	3.2E-01	3.4E-01	3.2E-01	2.7E-01	2.4E-01
SSE	9.3E-01	8.7E-01	6.8E-01	7.2E-01	6.8E-01	5.8E-01	5.0E-01
SE	1.5E+00	1.5E+00	1.1E+00	1.2E+00	1.1E+00	9.6E-01	8.3E-01
ESE	1.6E+00	1.5E+00	1.2E+00	1.3E+00	1.2E+00	1.0E+00	8.7E-01
E	1.8E+00	1.7E+00	1.3E+00	1.4E+00	1.3E+00	1.1E+00	9.8E-01
ENE	1.7E+00	1.6E+00	1.3E+00	1.3E+00	1.3E+00	1.1E+00	9.2E-01
NE	1.5E+00	1.4E+00	1.1E+00	1.1E+00	1.1E+00	9.2E-01	7.9E-01
NNE	8.9E-01	8.4E-01	6.5E-01	6.9E-01	6.5E-01	5.6E-01	4.8E-01

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1352	1143	1386	1431	2370	2439
N	8.5E-02	1.1E-01	8.1E-02	7.7E-02	3.4E-02	3.3E-02
NNW	5.7E-02	7.5E-02	5.5E-02	5.2E-02	2.4E-02	2.4E-02
NW	5.8E-02	7.6E-02	5.5E-02	5.2E-02	2.5E-02	2.4E-02
WNW	6.4E-02	8.5E-02	6.1E-02	5.8E-02	2.6E-02	2.5E-02
W	9.9E-02	1.3E-01	9.5E-02	8.9E-02	3.9E-02	3.7E-02
WSW	9.3E-02	1.2E-01	9.0E-02	8.5E-02	3.8E-02	3.7E-02
SW	5.7E-02	7.5E-02	5.5E-02	5.2E-02	2.5E-02	2.4E-02
SSW	5.0E-02	6.6E-02	4.8E-02	4.6E-02	2.2E-02	2.1E-02
S	6.0E-02	8.0E-02	5.8E-02	5.5E-02	2.5E-02	2.4E-02
SSE	1.2E-01	1.6E-01	1.1E-01	1.1E-01	4.4E-02	4.2E-02
SE	1.9E-01	2.6E-01	1.8E-01	1.7E-01	6.8E-02	6.5E-02
ESE	2.0E-01	2.8E-01	1.9E-01	1.8E-01	7.2E-02	6.9E-02
E	2.3E-01	3.1E-01	2.2E-01	2.1E-01	8.3E-02	7.9E-02
ENE	2.2E-01	3.0E-01	2.1E-01	2.0E-01	8.1E-02	7.7E-02
NE	1.9E-01	2.6E-01	1.8E-01	1.7E-01	7.1E-02	6.8E-02
NNE	1.2E-01	1.6E-01	1.2E-01	1.1E-01	4.7E-02	4.5E-02

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m) 2032	1976	2526	2019	1652	864	546
N	5.0E-07	5.2E-07	3.5E-07	5.0E-07	7.2E-07	2.4E-06	6.0E-06
NNW	3.3E-07	3.5E-07	2.4E-07	3.4E-07	4.7E-07	1.5E-06	3.8E-06
NW	3.3E-07	3.5E-07	2.4E-07	3.4E-07	4.8E-07	1.6E-06	3.9E-06
WNW	3.7E-07	3.8E-07	2.6E-07	3.7E-07	5.3E-07	1.8E-06	4.4E-06
W	5.7E-07	6.0E-07	4.0E-07	5.8E-07	8.4E-07	2.8E-06	7.1E-06
WSW	5.6E-07	5.9E-07	4.0E-07	5.7E-07	8.1E-07	2.6E-06	6.2E-06
SW	3.4E-07	3.5E-07	2.4E-07	3.4E-07	4.8E-07	1.5E-06	3.6E-06
SSW	2.9E-07	3.1E-07	2.1E-07	3.0E-07	4.2E-07	1.3E-06	3.3E-06
S	3.5E-07	3.7E-07	2.5E-07	3.5E-07	5.0E-07	1.7E-06	4.1E-06
SSE	6.7E-07	7.1E-07	4.6E-07	6.8E-07	1.0E-06	3.5E-06	8.8E-06
SE	1.1E-06	1.1E-06	7.3E-07	1.1E-06	1.6E-06	5.7E-06	1.5E-05
ESE	1.1E-06	1.2E-06	7.8E-07	1.2E-06	1.7E-06	6.1E-06	1.6E-05
E	1.3E-06	1.4E-06	9.0E-07	1.3E-06	2.0E-06	6.9E-06	1.7E-05
ENE	1.3E-06	1.3E-06	8.8E-07	1.3E-06	1.9E-06	6.5E-06	1.6E-05
NE	1.1E-06	1.2E-06	7.7E-07	1.1E-06	1.6E-06	5.6E-06	1.4E-05
NNE	7.1E-07	7.5E-07	4.9E-07	7.2E-07	1.0E-06	3.4E-06	8.5E-06

Direction	Distance (m) 472	485	551	536	551	597	642
N	8.0E-06	7.5E-06	5.9E-06	6.2E-06	5.9E-06	5.0E-06	4.3E-06
NNW	5.1E-06	4.8E-06	3.8E-06	4.0E-06	3.8E-06	3.2E-06	2.8E-06
NW	5.2E-06	4.9E-06	3.8E-06	4.1E-06	3.8E-06	3.3E-06	2.8E-06
WNW	5.9E-06	5.6E-06	4.4E-06	4.6E-06	4.4E-06	3.7E-06	3.2E-06
W	9.5E-06	8.9E-06	7.0E-06	7.3E-06	7.0E-06	5.9E-06	5.1E-06
WSW	8.3E-06	7.8E-06	6.1E-06	6.5E-06	6.1E-06	5.3E-06	4.6E-06
SW	4.8E-06	4.6E-06	3.6E-06	3.8E-06	3.6E-06	3.1E-06	2.7E-06
SSW	4.4E-06	4.1E-06	3.2E-06	3.4E-06	3.2E-06	2.7E-06	2.4E-06
S	5.5E-06	5.2E-06	4.1E-06	4.3E-06	4.1E-06	3.5E-06	3.0E-06
SSE	1.2E-05	1.1E-05	8.7E-06	9.2E-06	8.7E-06	7.4E-06	6.3E-06
SE	2.0E-05	1.9E-05	1.4E-05	1.5E-05	1.4E-05	1.2E-05	1.1E-05
ESE	2.1E-05	2.0E-05	1.5E-05	1.6E-05	1.5E-05	1.3E-05	1.1E-05
E	2.3E-05	2.2E-05	1.7E-05	1.8E-05	1.7E-05	1.5E-05	1.3E-05
ENE	2.2E-05	2.1E-05	1.6E-05	1.7E-05	1.6E-05	1.4E-05	1.2E-05
NE	1.9E-05	1.8E-05	1.4E-05	1.5E-05	1.4E-05	1.2E-05	1.0E-05
NNE	1.1E-05	1.1E-05	8.3E-06	8.8E-06	8.3E-06	7.1E-06	6.2E-06

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	1352	1143	1386	1431	2370	2439
N	1.0E-06	1.4E-06	9.9E-07	9.3E-07	3.9E-07	3.7E-07
NNW	6.8E-07	9.1E-07	6.5E-07	6.1E-07	2.6E-07	2.5E-07
NW	6.9E-07	9.3E-07	6.6E-07	6.2E-07	2.6E-07	2.5E-07
WNW	7.6E-07	1.0E-06	7.3E-07	6.9E-07	2.8E-07	2.7E-07
W	1.2E-06	1.7E-06	1.2E-06	1.1E-06	4.4E-07	4.2E-07
WSW	1.1E-06	1.5E-06	1.1E-06	1.0E-06	4.4E-07	4.2E-07
SW	6.7E-07	9.0E-07	6.5E-07	6.1E-07	2.7E-07	2.6E-07
SSW	5.9E-07	7.9E-07	5.7E-07	5.3E-07	2.3E-07	2.2E-07
S	7.2E-07	9.8E-07	6.9E-07	6.5E-07	2.7E-07	2.6E-07
SSE	1.5E-06	2.0E-06	1.4E-06	1.3E-06	5.2E-07	4.9E-07
SE	2.4E-06	3.3E-06	2.3E-06	2.1E-06	8.2E-07	7.8E-07
ESE	2.5E-06	3.5E-06	2.4E-06	2.3E-06	8.7E-07	8.3E-07
E	2.9E-06	4.0E-06	2.8E-06	2.6E-06	1.0E-06	9.6E-07
ENE	2.8E-06	3.8E-06	2.6E-06	2.5E-06	9.8E-07	9.3E-07
NE	2.4E-06	3.3E-06	2.3E-06	2.1E-06	8.6E-07	8.2E-07
NNE	1.5E-06	2.0E-06	1.4E-06	1.3E-06	5.5E-07	5.2E-07

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Apr 20, 1998 9:32 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

2.47E-01

At This Location: 1286 Meters East

Source Category: REMEDIATION SITE
Source Type: Area
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
STOCKPILE SWU-004/FLYASH [G2]

Dataset Name: 97-PILE3-G2
Dataset Date: Apr 20, 1998 9:25 am
Wind File: WNDFILES\97STAR.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 1286 Meters East
Lifetime Fatal Cancer Risk: 3.16E-06

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	6.89E-04
BREAST	7.86E-04
R MAR	3.21E-02
LUNGS	1.88E+00
THYROID	6.71E-04
ENDOST	4.23E-01
RMNDR	1.74E-02
EFFEC	2.47E-01

RADIONUCLIDE EMISSIONS DURING THE YEAR 1997

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	1.00	5.2E-04	5.2E-04
U-235	Y	1.00	2.7E-05	2.7E-05
U-236	Y	1.00	2.0E-05	2.0E-05
U-238	Y	1.00	5.8E-04	5.8E-04
RA-226	W	1.00	3.7E-07	3.7E-07
RA-228	W	1.00	1.5E-06	1.5E-06
TH-228	Y	1.00	1.5E-05	1.5E-05
TH-230	Y	1.00	4.6E-05	4.6E-05
TH-232	Y	1.00	2.4E-06	2.4E-06
TH-234	Y	1.00	2.3E-03	2.3E-03

SITE INFORMATION

Temperature: 11 degrees C
Precipitation: 102 cm/y
Mixing Height: 950 m

SOURCE INFORMATION

Source Number: 1

Source Height (m): 1.00
Area (sq m): 2.04E+04

Plume Rise Pasquill Cat:	A	B	C	D	E	F	G
Zero:	0.00	0.00	0.00	0.00	0.00	0.00	0.00

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

2046	2283	2160	2196	3025	2157	2032	2364	1286	2719
2797	2425	2215	2067	2498	2580	2527	1391	1427	2564

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Apr 20, 1998 9:32 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Area
Emission Year: 1997

Comments: 1997 NESHAP Demonstration
STOCKPILE SWU-004/FLYASH [G2]

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ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	6.89E-04
BREAST	7.86E-04
R MAR	3.21E-02
LUNGS	1.88E+00
THYROID	6.71E-04
ENDOST	4.23E-01
RMNDR	1.74E-02
EFFEC	2.47E-01

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	1.24E-02
INHALATION	2.35E-01
AIR IMMERSION	1.97E-08
GROUND SURFACE	1.38E-04
INTERNAL	2.47E-01
EXTERNAL	1.38E-04
TOTAL	2.48E-01

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	1.07E-01
U-235	5.37E-03
U-236	3.93E-03
U-238	1.06E-01
RA-226	9.79E-06
RA-228	1.55E-05
TH-228	5.90E-03
TH-230	1.73E-02
TH-232	1.32E-03
TH-234	2.64E-04
TOTAL	2.48E-01

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	3.12E-08
BONE	2.07E-08
THYROID	1.55E-10
BREAST	1.75E-09
LUNG	3.06E-06
STOMACH	1.17E-09
BOWEL	3.08E-09
LIVER	1.46E-09
PANCREAS	6.77E-10
URINARY	3.61E-08
OTHER	8.28E-10
TOTAL	3.16E-06

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	6.59E-08
INHALATION	3.09E-06
AIR IMMERSION	4.39E-13
GROUND SURFACE	3.18E-09
INTERNAL	3.16E-06
EXTERNAL	3.18E-09
TOTAL	3.16E-06

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	1.38E-06
U-235	7.06E-08
U-236	5.07E-08
U-238	1.38E-06
RA-226	1.34E-10
RA-228	1.62E-10
TH-228	1.18E-07
TH-230	1.42E-07
TH-232	7.45E-09
TH-234	8.68E-09
TOTAL	3.16E-06

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	2046	2283	2160	2196	3025	2157	2032
N	3.7E-02	3.0E-02	3.3E-02	3.2E-02	1.9E-02	3.4E-02	3.7E-02
NNW	2.4E-02	2.0E-02	2.2E-02	2.1E-02	1.2E-02	2.2E-02	2.4E-02
NW	2.4E-02	2.0E-02	2.2E-02	2.1E-02	1.2E-02	2.2E-02	2.4E-02
WNW	2.7E-02	2.2E-02	2.4E-02	2.3E-02	1.3E-02	2.4E-02	2.7E-02
W	4.3E-02	3.5E-02	3.9E-02	3.8E-02	2.1E-02	3.9E-02	4.3E-02
WSW	4.2E-02	3.5E-02	3.8E-02	3.7E-02	2.2E-02	3.8E-02	4.2E-02
SW	2.5E-02	2.0E-02	2.2E-02	2.2E-02	1.3E-02	2.2E-02	2.5E-02
SSW	2.1E-02	1.8E-02	1.9E-02	1.9E-02	1.1E-02	1.9E-02	2.1E-02
S	2.5E-02	2.1E-02	2.3E-02	2.2E-02	1.3E-02	2.3E-02	2.6E-02
SSE	5.0E-02	4.1E-02	4.6E-02	4.4E-02	2.5E-02	4.6E-02	5.1E-02
SE	8.1E-02	6.7E-02	7.4E-02	7.2E-02	3.9E-02	7.4E-02	8.2E-02
ESE	8.7E-02	7.1E-02	7.9E-02	7.6E-02	4.2E-02	7.9E-02	8.8E-02
E	1.0E-01	8.3E-02	9.1E-02	8.9E-02	4.9E-02	9.2E-02	1.0E-01
ENE	9.7E-02	8.0E-02	8.8E-02	8.6E-02	4.8E-02	8.9E-02	9.9E-02
NE	8.5E-02	7.0E-02	7.7E-02	7.5E-02	4.2E-02	7.7E-02	8.6E-02
NNE	5.3E-02	4.4E-02	4.9E-02	4.7E-02	2.7E-02	4.9E-02	5.4E-02

	Distance (m)						
Direction	2364	1286	2719	2797	2425	2215	2067
N	2.9E-02	8.7E-02	2.2E-02	2.1E-02	2.7E-02	3.2E-02	3.6E-02
NNW	1.9E-02	5.6E-02	1.5E-02	1.4E-02	1.8E-02	2.1E-02	2.4E-02
NW	1.9E-02	5.7E-02	1.5E-02	1.4E-02	1.8E-02	2.1E-02	2.4E-02
WNW	2.1E-02	6.4E-02	1.6E-02	1.5E-02	2.0E-02	2.3E-02	2.6E-02
W	3.3E-02	1.0E-01	2.6E-02	2.5E-02	3.2E-02	3.7E-02	4.2E-02
WSW	3.3E-02	9.6E-02	2.6E-02	2.5E-02	3.1E-02	3.7E-02	4.1E-02
SW	1.9E-02	5.6E-02	1.5E-02	1.5E-02	1.8E-02	2.1E-02	2.4E-02
SSW	1.7E-02	4.9E-02	1.3E-02	1.2E-02	1.6E-02	1.8E-02	2.1E-02
S	2.0E-02	6.0E-02	1.6E-02	1.5E-02	1.9E-02	2.2E-02	2.5E-02
SSE	3.9E-02	1.2E-01	3.0E-02	2.9E-02	3.7E-02	4.4E-02	4.9E-02
SE	6.3E-02	2.0E-01	4.8E-02	4.6E-02	6.0E-02	7.0E-02	8.0E-02
ESE	6.7E-02	2.2E-01	5.2E-02	4.9E-02	6.4E-02	7.5E-02	8.5E-02
E	7.8E-02	2.5E-01	6.0E-02	5.7E-02	7.4E-02	8.7E-02	9.9E-02
ENE	7.5E-02	2.4E-01	5.8E-02	5.6E-02	7.2E-02	8.5E-02	9.6E-02
NE	6.6E-02	2.0E-01	5.1E-02	4.9E-02	6.3E-02	7.4E-02	8.3E-02
NNE	4.2E-02	1.3E-01	3.3E-02	3.1E-02	4.0E-02	4.7E-02	5.2E-02

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INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	2498	2580	2527	1391	1427	2564
N	2.6E-02	2.5E-02	2.5E-02	7.5E-02	7.2E-02	2.5E-02
NNW	1.7E-02	1.6E-02	1.7E-02	4.9E-02	4.6E-02	1.6E-02
NW	1.7E-02	1.6E-02	1.7E-02	4.9E-02	4.7E-02	1.6E-02
WNW	1.9E-02	1.8E-02	1.8E-02	5.5E-02	5.2E-02	1.8E-02
W	3.0E-02	2.8E-02	2.9E-02	8.8E-02	8.4E-02	2.9E-02
WSW	3.0E-02	2.8E-02	2.9E-02	8.3E-02	8.0E-02	2.9E-02
SW	1.8E-02	1.7E-02	1.7E-02	4.9E-02	4.6E-02	1.7E-02
SSW	1.5E-02	1.4E-02	1.5E-02	4.2E-02	4.0E-02	1.4E-02
S	1.8E-02	1.7E-02	1.8E-02	5.2E-02	4.9E-02	1.7E-02
SSE	3.5E-02	3.3E-02	3.4E-02	1.1E-01	1.0E-01	3.4E-02
SE	5.7E-02	5.3E-02	5.5E-02	1.7E-01	1.7E-01	5.4E-02
ESE	6.0E-02	5.7E-02	5.9E-02	1.9E-01	1.8E-01	5.7E-02
E	7.0E-02	6.6E-02	6.9E-02	2.1E-01	2.0E-01	6.7E-02
ENE	6.8E-02	6.4E-02	6.7E-02	2.0E-01	1.9E-01	6.5E-02
NE	6.0E-02	5.6E-02	5.8E-02	1.8E-01	1.7E-01	5.7E-02
NNE	3.8E-02	3.6E-02	3.7E-02	1.1E-01	1.0E-01	3.6E-02

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m) 2046	2283	2160	2196	3025	2157	2032
N	4.6E-07	3.8E-07	4.2E-07	4.1E-07	2.3E-07	4.2E-07	4.7E-07
NNW	3.0E-07	2.5E-07	2.7E-07	2.6E-07	1.5E-07	2.7E-07	3.0E-07
NW	3.0E-07	2.5E-07	2.7E-07	2.7E-07	1.5E-07	2.7E-07	3.0E-07
WNW	3.3E-07	2.7E-07	3.0E-07	2.9E-07	1.6E-07	3.0E-07	3.3E-07
W	5.4E-07	4.4E-07	4.9E-07	4.7E-07	2.6E-07	4.9E-07	5.4E-07
WSW	5.3E-07	4.4E-07	4.8E-07	4.7E-07	2.7E-07	4.8E-07	5.3E-07
SW	3.0E-07	2.5E-07	2.8E-07	2.7E-07	1.5E-07	2.8E-07	3.1E-07
SSW	2.6E-07	2.2E-07	2.4E-07	2.3E-07	1.3E-07	2.4E-07	2.6E-07
S	3.2E-07	2.6E-07	2.9E-07	2.8E-07	1.6E-07	2.9E-07	3.2E-07
SSE	6.3E-07	5.2E-07	5.8E-07	5.6E-07	3.1E-07	5.8E-07	6.4E-07
SE	1.0E-06	8.5E-07	9.4E-07	9.1E-07	5.0E-07	9.4E-07	1.0E-06
ESE	1.1E-06	9.0E-07	1.0E-06	9.7E-07	5.3E-07	1.0E-06	1.1E-06
E	1.3E-06	1.0E-06	1.2E-06	1.1E-06	6.2E-07	1.2E-06	1.3E-06
ENE	1.2E-06	1.0E-06	1.1E-06	1.1E-06	6.1E-07	1.1E-06	1.3E-06
NE	1.1E-06	8.9E-07	9.8E-07	9.5E-07	5.3E-07	9.8E-07	1.1E-06
NNE	6.7E-07	5.6E-07	6.1E-07	5.9E-07	3.4E-07	6.1E-07	6.8E-07

Direction	Distance (m) 2364	1286	2719	2797	2425	2215	2067
N	3.6E-07	1.1E-06	2.8E-07	2.6E-07	3.4E-07	4.0E-07	4.5E-07
NNW	2.3E-07	7.1E-07	1.8E-07	1.7E-07	2.2E-07	2.6E-07	2.9E-07
NW	2.3E-07	7.2E-07	1.8E-07	1.7E-07	2.2E-07	2.6E-07	3.0E-07
WNW	2.6E-07	8.1E-07	2.0E-07	1.9E-07	2.4E-07	2.9E-07	3.2E-07
W	4.1E-07	1.3E-06	3.2E-07	3.1E-07	4.0E-07	4.7E-07	5.3E-07
WSW	4.1E-07	1.2E-06	3.2E-07	3.1E-07	3.9E-07	4.6E-07	5.2E-07
SW	2.4E-07	7.1E-07	1.9E-07	1.8E-07	2.3E-07	2.7E-07	3.0E-07
SSW	2.0E-07	6.2E-07	1.6E-07	1.5E-07	1.9E-07	2.3E-07	2.6E-07
S	2.4E-07	7.6E-07	1.9E-07	1.8E-07	2.3E-07	2.7E-07	3.1E-07
SSE	4.9E-07	1.6E-06	3.8E-07	3.6E-07	4.7E-07	5.5E-07	6.2E-07
SE	7.9E-07	2.6E-06	6.1E-07	5.8E-07	7.6E-07	8.9E-07	1.0E-06
ESE	8.5E-07	2.8E-06	6.5E-07	6.2E-07	8.1E-07	9.5E-07	1.1E-06
E	9.8E-07	3.2E-06	7.6E-07	7.2E-07	9.4E-07	1.1E-06	1.3E-06
ENE	9.5E-07	3.0E-06	7.4E-07	7.0E-07	9.1E-07	1.1E-06	1.2E-06
NE	8.3E-07	2.6E-06	6.5E-07	6.1E-07	7.9E-07	9.4E-07	1.1E-06
NNE	5.2E-07	1.6E-06	4.1E-07	3.9E-07	5.0E-07	5.9E-07	6.6E-07

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)					
Direction	2498	2580	2527	1391	1427	2564
N	3.2E-07	3.1E-07	3.2E-07	9.5E-07	9.1E-07	3.1E-07
NNW	2.1E-07	2.0E-07	2.1E-07	6.1E-07	5.8E-07	2.0E-07
NW	2.1E-07	2.0E-07	2.1E-07	6.2E-07	5.9E-07	2.0E-07
WNW	2.3E-07	2.2E-07	2.3E-07	6.9E-07	6.6E-07	2.2E-07
W	3.8E-07	3.5E-07	3.7E-07	1.1E-06	1.1E-06	3.6E-07
WSW	3.7E-07	3.5E-07	3.7E-07	1.1E-06	1.0E-06	3.6E-07
SW	2.2E-07	2.0E-07	2.1E-07	6.1E-07	5.8E-07	2.1E-07
SSW	1.8E-07	1.7E-07	1.8E-07	5.3E-07	5.1E-07	1.8E-07
S	2.2E-07	2.1E-07	2.2E-07	6.5E-07	6.2E-07	2.1E-07
SSE	4.4E-07	4.2E-07	4.3E-07	1.4E-06	1.3E-06	4.2E-07
SE	7.2E-07	6.7E-07	7.0E-07	2.2E-06	2.1E-06	6.8E-07
ESE	7.6E-07	7.2E-07	7.5E-07	2.4E-06	2.2E-06	7.3E-07
E	8.9E-07	8.4E-07	8.7E-07	2.7E-06	2.6E-06	8.5E-07
ENE	8.6E-07	8.1E-07	8.5E-07	2.6E-06	2.5E-06	8.2E-07
NE	7.5E-07	7.1E-07	7.4E-07	2.2E-06	2.1E-06	7.2E-07
NNE	4.7E-07	4.5E-07	4.6E-07	1.4E-06	1.3E-06	4.5E-07