7206 G-000-104.176

1994 NATIONAL EMISSIONS STANDARDS FOR HAZARDOUS AIR POLLUTANTS ANNUAL REPORT FOR THE FERNALD ENVIRONMENTAL MANAGEMENT PROJECT, 40 CFR61, SUBPART H

06/29/95

DOE-1150-95
DOE-FN USEPA
125
REPORT

7206

Department of Energy
Fernald Environmental Management Project
P. O. Box 398705
Cincinnati, Ohio 45239-8705
(513) 648-3155

JUN 2 9 1995

DOE-1150-95

Mr. Valdas V. Adamkus, Regional Administrator
U.S. Environmental Protection Agency
Region V - 5A-14
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

Dear Mr. Adamkus:

1994 NATIONAL EMISSIONS STANDARDS FOR HAZARDOUS AIR POLLUTANTS ANNUAL REPORT FOR THE FERNALD ENVIRONMENTAL MANAGEMENT PROJECT, 40 CFR 61, SUBPART H

Enclosed is the Calendar Year 1994 National Emissions Standards For Hazardous Air Pollutants (NESHAP) Annual Report, required by 40 CFR 61.94(b), for the Fernald Environmental Management Project. Attached to the report are the CAP88-PC files used to assess the annual dose.

This report estimates an Effective Dose Equivalent (EDE) to the Maximally Exposed Individual (MEI), using 1994 site meteorological data, of 0.17 mrem, as compared to the NESHAP Subpart H standard of 10 mrem.

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

Sincerely,

David R. Kozlowski
Associate Director
Office of Safety and Assessment

FN:Skintik

Enclosures: As stated

cc w/enc:

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

w/o enc:

S. M. Beckman, FERMCO/MS65-2

000001

Recycled and Recyclable

CAP88-PC File: WEATHER DATA - 94-PLANT1-(I)-G1

NON-RADON INDIVIDUAL ASSESSMENTS

SYNOPSIS REPORTS	DOSE AND RISK EQUIVALENT SUMMARIES
94-PLANT1-(I)-G1	94-PLANT1-(I)-G1
94-PLANT1-(I)-G2	94-PLANT1-(I)-G2
94-PLANT7-(I)-G1	94-PLANT7-(I)-G1
94-PLANT7-(I)-G2	94-PLANT7-(I)-G2
94-PLANT8-(I)-G1	94-PLANT8-(I)-G1
94-PLANT8-(I)-G2	94-PLANT8-(I)-G2
94-PLANT9-(I)-G1	94-PLANT9-(I)-G1
94-PLANT9-(I)-G2	94-PLANT9-(I)-G2
94-11LAUN-(I)-G1	94-11LAUN-(I)-G1
94-11LAUN-(I)-G2	94-11LAUN-(I)-G2
94-RWF-(I)-G1	94-RWF-(I)-G1
94-RWF-(I)-G2	94-RWF-(I)-G2
94-15GEN-(I)-G1	94-15GEN-(I)-G1
94-15GEN-(I)-G2	94-15GEN-(I)-G2
94-15HEPA-(I)-G1	94-15HEPA-(I)-G1
94-15HEPA-(I)-G2	94-15HEPA-(I)-G2
94-15PERC-(I)-G1	94-15PERC-(I)-G1
94-15PERC-(I)-G2	94-15PERC-(I)-G2
94-COOLWTR-(I)-G1	94-COOLWTR-(I)-G1
94-COOLWTR-(I)-G2	94-COOLWTR-(I)-G2
94-WTRPLT-(I)-G1	94-WTRPLT-(I)-G1
94-WTRPLT-(I)-G2	94-WTRPLT-(I)-G2
94-H&SLAB-(I)-G1	94-H&SLAB-(I)-G1
94-H&SLAB-(I)-G2	94-H&SLAB-(I)-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, the highlighted numbers in the DOSE AND RISK EQUIVALENT SUMMARIES 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.

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

W E A T H E R D A T A

Non-Radon Individual Assessment
Jun 5, 1995 10:42 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Plant 1, 1 = SILO, 2 = SIZE RED (Z010)

Dataset Name: 94-PLANT1-(I)-G1
Dataset Date: Jun 5, 1995 10:38 am
Wind File: WNDFILES\WIND94.WND

HARMONIC AVERAGE WIND SPEEDS (WIND TOWARDS)

Dir	Pasquill Stability Class A	B	C	D	E	F	G	Wind Frequency
N	3.239	1.794	1.660	1.562	1.245	0.811	0.000	0.027
NNW	2.722	3.181	1.342	1.224	0.938	0.783	0.000	0.027
NW	2.969	1.284	1.622	1.099	0.831	0.772	0.000	0.025
WNW	1.325	1.532	1.717	1.284	0.965	0.785	0.000	0.045
W	3.115	2.267	2.747	1.931	1.276	0.834	0.000	0.081
WSW	3.444	3.238	2.031	2.087	1.289	0.772	0.000	0.055
SW	3.239	2.187	2.281	2.740	1.213	0.772	0.000	0.037
SSW	4.623	1.914	2.917	2.435	1.037	0.772	0.000	0.033
S	0.000	4.106	3.097	2.938	2.279	1.057	0.786	0.052
SSE	4.873	4.218	2.884	2.050	1.092	0.773	0.000	0.083
SE	5.062	3.988	2.555	2.157	1.051	0.772	0.000	0.092
ESE	4.650	3.494	2.643	1.876	1.144	0.778	0.000	0.093
E	4.165	2.915	2.633	1.748	0.983	0.788	0.000	0.098
ENE	3.795	2.833	1.923	2.043	1.206	0.822	0.000	0.114
NE	2.988	2.486	2.290	1.975	1.389	0.787	0.000	0.090
NNE	2.545	1.707	2.122	1.654	1.343	0.865	0.000	0.048

ARITHMETIC AVERAGE WIND SPEEDS (WIND TOWARDS)

Dir	Pasquill Stability Class A	B	C	D	E	F	G
N	3.472	2.382	2.268	2.368	2.222	0.895	0.000
NNW	3.559	3.409	2.234	1.783	1.329	0.808	0.000
NW	3.156	1.798	2.120	1.592	0.955	0.772	0.000
WNW	1.846	2.236	2.572	2.024	1.303	0.815	0.000
W	3.334	3.230	3.266	2.907	1.851	0.963	0.000
WSW	3.679	3.540	2.697	2.693	1.804	0.772	0.000
SW	3.472	2.930	3.289	3.400	1.752	0.772	0.000
SSW	5.123	2.962	3.090	3.307	1.460	0.772	0.000
S	0.000	4.525	3.313	3.410	3.083	1.523	0.818
SSE	5.285	4.459	3.521	2.986	1.656	0.778	0.000
SE	5.318	4.319	3.464	3.326	1.603	0.772	0.000
ESE	4.879	4.273	3.138	3.070	1.813	0.793	0.000
E	4.290	3.870	3.298	2.843	1.394	0.824	0.000
ENE	4.083	3.446	2.657	2.935	1.840	0.929	0.000
NE	3.455	3.152	2.933	2.914	2.127	0.823	0.000
NNE	2.957	2.572	2.964	2.570	2.303	1.048	0.000

FREQUENCIES OF STABILITY CLASSES (WIND TOWARDS)

	Pasquill Stability Class						
Dir	A	B	C	D	E	F	G
N	0.0466	0.0462	0.0556	0.3147	0.2684	0.2684	0.0000
NNW	0.0496	0.0680	0.0724	0.3304	0.2624	0.2172	0.0000
NW	0.0147	0.0342	0.0982	0.2697	0.2892	0.2940	0.0000
WNW	0.0138	0.0439	0.0736	0.2868	0.2405	0.3414	0.0000
W	0.0288	0.0484	0.0742	0.4872	0.2328	0.1286	0.0000
WSW	0.0294	0.0517	0.0765	0.5505	0.1528	0.1393	0.0000
SW	0.0202	0.0508	0.0708	0.5824	0.1110	0.1648	0.0000
SSW	0.0295	0.0334	0.0262	0.4890	0.1738	0.2481	0.0000
S	0.0000	0.0117	0.0401	0.0661	0.2695	0.2436	0.3690
SSE	0.0224	0.0402	0.0685	0.2649	0.1695	0.4344	0.0000
SE	0.0254	0.0334	0.0295	0.3404	0.1736	0.3978	0.0000
ESE	0.0423	0.0409	0.0503	0.3202	0.2156	0.3307	0.0000
E	0.0441	0.0378	0.0706	0.2749	0.2699	0.3027	0.0000
ENE	0.0518	0.0465	0.0765	0.2686	0.3225	0.2341	0.0000
NE	0.0932	0.0823	0.0919	0.2853	0.3031	0.1441	0.0000
NNE	0.0485	0.0487	0.0818	0.2245	0.3647	0.2319	0.0000
TOT	0.0383	0.0452	0.0659	0.3250	0.2417	0.2647	0.0192

ADDITIONAL WEATHER INFORMATION

Average Air Temperature:	11.4 degrees C
	284.6 K
Precipitation:	97.6 cm/y
Lid Height:	950 meters
Surface Roughness Length:	0.010 meters
Height Of Wind Measurements:	10.0 meters
Average Wind Speed:	2.130 m/s

Vertical Temperature Gradients:

STABILITY E	0.073 k/m
STABILITY F	0.109 k/m
STABILITY G	0.146 k/m

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
Jun 5, 1995 10:42 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

6.30E-05

At This Location: 966 Meters East Northeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Plant 1, 1 = SILO, 2 = SIZE RED (Z010)

Dataset Name: 94-PLANT1-(I)-G1
Dataset Date: Jun 5, 1995 10:38 am
Wind File: WNDFILES\WIND94.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 966 Meters East Northeast
Lifetime Fatal Cancer Risk: 6.30E-10

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	1.67E-07
BREAST	1.75E-07
R MAR	4.57E-05
LUNGS	3.34E-04
THYROID	1.65E-07
ENDOST	5.70E-04
RMNDR	8.97E-07
EFFEC	6.30E-05

RADIONUCLIDE EMISSIONS DURING THE YEAR 1994

Nuclide	Class	Size	Source #1 Ci/y	Source #2 Ci/y	TOTAL Ci/y
U-234	Y	0.30	1.5E-08	6.4E-09	2.1E-08
U-235	Y	1.00	9.4E-10	6.0E-10	1.5E-09
U-236	Y	1.00	9.4E-10	6.0E-10	1.5E-09
U-238	Y	0.30	1.0E-08	5.7E-09	1.6E-08
TH-228	Y	0.30	1.2E-08	4.8E-09	1.7E-08
TH-230	Y	0.30	7.2E-08	3.7E-08	1.1E-07
TH-232	Y	0.30	8.6E-09	1.7E-09	1.0E-08

SITE INFORMATION

Temperature:	12 degrees C
Precipitation:	98 cm/y
Mixing Height:	950 m

SOURCE INFORMATION

Source Number:	1	2
Stack Height (m):	14.30	6.10
Diameter (m):	0.76	0.46
Plume Rise Momentum (m/s): (Exit Velocity)	1.27E+01	1.67E+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

1026	966	1674	1346	1083	996	1210	1310	1349	1514
1517	1555	1494	1495	2109	1626	1363	1345	1688	1563

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
Jun 5, 1995 10:42 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Plant 1, 1 = SILO, 2 = SIZE RED (Z010)

Dataset Name: 94-PLANT1-(I)-G1
Dataset Date: Jun 5, 1995 10:38 am
Wind File: WNDFILES\WIND94.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	1.67E-07
BREAST	1.75E-07
R MAR	4.57E-05
LUNGS	3.34E-04
THYROID	1.65E-07
ENDOST	5.70E-04
RMNDR	8.97E-07
EFFEC	6.30E-05

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	8.14E-07
INHALATION	6.22E-05
AIR IMMERSION	1.82E-13
GROUND SURFACE	7.43E-09
INTERNAL	6.30E-05
EXTERNAL	7.43E-09
TOTAL	6.30E-05

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	4.60E-06
U-235	1.97E-07
U-236	1.96E-07
U-238	3.12E-06
TH-228	6.60E-06
TH-230	4.30E-05
TH-232	5.31E-06
TOTAL	6.30E-05

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	3.86E-11
BONE	2.54E-11
THYROID	2.83E-14
BREAST	2.64E-13
LUNG	5.63E-10
STOMACH	1.96E-13
BOWEL	2.28E-13
LIVER	1.26E-12
PANCREAS	1.37E-13
URINARY	1.08E-12
OTHER	1.67E-13
TOTAL	6.30E-10

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	3.30E-12
INHALATION	6.26E-10
AIR IMMERSION	4.20E-18
GROUND SURFACE	1.69E-13
INTERNAL	6.30E-10
EXTERNAL	1.69E-13
TOTAL	6.30E-10

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	5.99E-11
U-235	2.58E-12
U-236	2.51E-12
U-238	4.09E-11
TH-228	1.33E-10
TH-230	3.60E-10
TH-232	3.02E-11
TOTAL	6.30E-10

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

	Distance (m)						
Direction	1026	966	1674	1346	1083	996	1210
N	1.5E-05	1.5E-05	8.7E-06	1.1E-05	1.4E-05	1.5E-05	1.2E-05
NNW	1.6E-05	1.7E-05	9.3E-06	1.2E-05	1.5E-05	1.7E-05	1.3E-05
NW	1.5E-05	1.6E-05	9.5E-06	1.2E-05	1.5E-05	1.6E-05	1.3E-05
WNW	2.6E-05	2.7E-05	1.6E-05	2.0E-05	2.5E-05	2.7E-05	2.2E-05
W	3.9E-05	4.2E-05	2.1E-05	2.8E-05	3.7E-05	4.1E-05	3.2E-05
WSW	2.3E-05	2.4E-05	1.3E-05	1.6E-05	2.1E-05	2.4E-05	1.9E-05
SW	1.3E-05	1.4E-05	7.6E-06	9.7E-06	1.2E-05	1.4E-05	1.1E-05
SSW	1.4E-05	1.5E-05	8.9E-06	1.1E-05	1.4E-05	1.5E-05	1.2E-05
S	1.8E-05	1.9E-05	1.1E-05	1.4E-05	1.7E-05	1.8E-05	1.5E-05
SSE	3.7E-05	3.8E-05	2.6E-05	3.0E-05	3.5E-05	3.7E-05	3.3E-05
SE	4.2E-05	4.3E-05	2.8E-05	3.4E-05	4.0E-05	4.3E-05	3.7E-05
ESE	4.4E-05	4.7E-05	2.8E-05	3.5E-05	4.2E-05	4.5E-05	3.8E-05
E	5.2E-05	5.4E-05	3.2E-05	4.0E-05	4.9E-05	5.3E-05	4.5E-05
ENE	6.0E-05	6.3E-05	3.5E-05	4.5E-05	5.6E-05	6.1E-05	5.0E-05
NE	3.9E-05	4.2E-05	2.2E-05	2.9E-05	3.7E-05	4.1E-05	3.2E-05
NNE	2.7E-05	2.9E-05	1.6E-05	2.0E-05	2.6E-05	2.8E-05	2.3E-05

	Distance (m)						
Direction	1310	1349	1514	1517	1555	1494	1495
N	1.1E-05	1.1E-05	9.7E-06	9.7E-06	9.4E-06	9.8E-06	9.8E-06
NNW	1.2E-05	1.2E-05	1.0E-05	1.0E-05	1.0E-05	1.1E-05	1.1E-05
NW	1.2E-05	1.2E-05	1.1E-05	1.1E-05	1.0E-05	1.1E-05	1.1E-05
WNW	2.1E-05	2.0E-05	1.8E-05	1.8E-05	1.8E-05	1.8E-05	1.8E-05
W	2.9E-05	2.8E-05	2.4E-05	2.4E-05	2.3E-05	2.5E-05	2.5E-05
WSW	1.7E-05	1.6E-05	1.4E-05	1.4E-05	1.4E-05	1.4E-05	1.4E-05
SW	1.0E-05	9.7E-06	8.5E-06	8.5E-06	8.3E-06	8.6E-06	8.6E-06
SSW	1.1E-05	1.1E-05	9.9E-06	9.8E-06	9.6E-06	1.0E-05	1.0E-05
S	1.4E-05	1.4E-05	1.2E-05	1.2E-05	1.2E-05	1.3E-05	1.3E-05
SSE	3.1E-05	3.0E-05	2.8E-05	2.8E-05	2.7E-05	2.8E-05	2.8E-05
SE	3.5E-05	3.4E-05	3.1E-05	3.1E-05	3.0E-05	3.1E-05	3.1E-05
ESE	3.6E-05	3.5E-05	3.1E-05	3.1E-05	3.0E-05	3.2E-05	3.2E-05
E	4.1E-05	4.0E-05	3.6E-05	3.6E-05	3.5E-05	3.6E-05	3.6E-05
ENE	4.6E-05	4.5E-05	3.9E-05	3.9E-05	3.8E-05	4.0E-05	4.0E-05
NE	3.0E-05	2.8E-05	2.5E-05	2.5E-05	2.4E-05	2.5E-05	2.5E-05
NNE	2.1E-05	2.0E-05	1.8E-05	1.8E-05	1.7E-05	1.8E-05	1.8E-05

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

	Distance (m)					
Direction	2109	1626	1363	1345	1688	1563
N	6.6E-06	8.9E-06	1.1E-05	1.1E-05	8.6E-06	9.3E-06
NNW	7.0E-06	9.6E-06	1.2E-05	1.2E-05	9.2E-06	1.0E-05
NW	7.4E-06	9.8E-06	1.2E-05	1.2E-05	9.4E-06	1.0E-05
WNW	1.3E-05	1.7E-05	2.0E-05	2.0E-05	1.6E-05	1.7E-05
W	1.6E-05	2.2E-05	2.8E-05	2.8E-05	2.1E-05	2.3E-05
WSW	9.4E-06	1.3E-05	1.6E-05	1.6E-05	1.2E-05	1.4E-05
SW	5.8E-06	7.9E-06	9.6E-06	9.7E-06	7.5E-06	8.2E-06
SSW	6.9E-06	9.2E-06	1.1E-05	1.1E-05	8.8E-06	9.6E-06
S	9.0E-06	1.2E-05	1.4E-05	1.4E-05	1.1E-05	1.2E-05
SSE	2.1E-05	2.6E-05	3.0E-05	3.0E-05	2.6E-05	2.7E-05
SE	2.3E-05	2.9E-05	3.4E-05	3.4E-05	2.8E-05	3.0E-05
ESE	2.2E-05	2.9E-05	3.4E-05	3.5E-05	2.8E-05	3.0E-05
E	2.5E-05	3.3E-05	4.0E-05	4.0E-05	3.2E-05	3.5E-05
ENE	2.7E-05	3.6E-05	4.4E-05	4.5E-05	3.5E-05	3.8E-05
NE	1.6E-05	2.3E-05	2.8E-05	2.9E-05	2.2E-05	2.4E-05
NNE	1.2E-05	1.6E-05	2.0E-05	2.0E-05	1.5E-05	1.7E-05

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

Direction	Distance (m) 1026	966	1674	1346	1083	996	1210
N	1.5E-10	1.5E-10	8.6E-11	1.1E-10	1.4E-10	1.5E-10	1.2E-10
NNW	1.6E-10	1.7E-10	9.2E-11	1.2E-10	1.5E-10	1.7E-10	1.3E-10
NW	1.5E-10	1.6E-10	9.5E-11	1.2E-10	1.5E-10	1.6E-10	1.3E-10
WNW	2.6E-10	2.7E-10	1.6E-10	2.0E-10	2.5E-10	2.7E-10	2.2E-10
W	3.9E-10	4.2E-10	2.1E-10	2.8E-10	3.7E-10	4.1E-10	3.2E-10
WSW	2.3E-10	2.4E-10	1.2E-10	1.6E-10	2.1E-10	2.4E-10	1.9E-10
SW	1.3E-10	1.4E-10	7.5E-11	9.6E-11	1.2E-10	1.3E-10	1.1E-10
SSW	1.4E-10	1.5E-10	8.8E-11	1.1E-10	1.4E-10	1.5E-10	1.2E-10
S	1.8E-10	1.9E-10	1.1E-10	1.4E-10	1.7E-10	1.8E-10	1.5E-10
SSE	3.7E-10	3.8E-10	2.6E-10	3.0E-10	3.5E-10	3.7E-10	3.3E-10
SE	4.2E-10	4.3E-10	2.8E-10	3.4E-10	4.0E-10	4.2E-10	3.7E-10
ESE	4.4E-10	4.6E-10	2.8E-10	3.5E-10	4.2E-10	4.5E-10	3.8E-10
E	5.2E-10	5.4E-10	3.2E-10	4.0E-10	4.9E-10	5.3E-10	4.4E-10
ENE	6.0E-10	6.3E-10	3.5E-10	4.5E-10	5.6E-10	6.1E-10	5.0E-10
NE	3.9E-10	4.2E-10	2.2E-10	2.9E-10	3.7E-10	4.1E-10	3.2E-10
NNE	2.7E-10	2.9E-10	1.6E-10	2.0E-10	2.6E-10	2.8E-10	2.3E-10

Direction	Distance (m) 1310	1349	1514	1517	1555	1494	1495
N	1.1E-10	1.1E-10	9.6E-11	9.6E-11	9.3E-11	9.7E-11	9.7E-11
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	1.1E-10	1.0E-10	1.0E-10	1.1E-10	1.1E-10
WNW	2.1E-10	2.0E-10	1.8E-10	1.8E-10	1.8E-10	1.8E-10	1.8E-10
W	2.9E-10	2.8E-10	2.4E-10	2.4E-10	2.3E-10	2.5E-10	2.5E-10
WSW	1.7E-10	1.6E-10	1.4E-10	1.4E-10	1.4E-10	1.4E-10	1.4E-10
SW	9.9E-11	9.6E-11	8.4E-11	8.4E-11	8.2E-11	8.6E-11	8.6E-11
SSW	1.1E-10	1.1E-10	9.8E-11	9.8E-11	9.5E-11	9.9E-11	9.9E-11
S	1.4E-10	1.4E-10	1.2E-10	1.2E-10	1.2E-10	1.3E-10	1.3E-10
SSE	3.1E-10	3.0E-10	2.8E-10	2.8E-10	2.7E-10	2.8E-10	2.8E-10
SE	3.5E-10	3.4E-10	3.1E-10	3.1E-10	3.0E-10	3.1E-10	3.1E-10
ESE	3.6E-10	3.5E-10	3.1E-10	3.1E-10	3.0E-10	3.2E-10	3.2E-10
E	4.1E-10	4.0E-10	3.6E-10	3.6E-10	3.5E-10	3.6E-10	3.6E-10
ENE	4.6E-10	4.5E-10	3.9E-10	3.9E-10	3.8E-10	4.0E-10	4.0E-10
NE	2.9E-10	2.8E-10	2.5E-10	2.5E-10	2.4E-10	2.5E-10	2.5E-10
NNE	2.1E-10	2.0E-10	1.8E-10	1.7E-10	1.7E-10	1.8E-10	1.8E-10

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

	Distance (m)					
Direction	2109	1626	1363	1345	1688	1563
N	6.6E-11	8.9E-11	1.1E-10	1.1E-10	8.5E-11	9.3E-11
NNW	6.9E-11	9.5E-11	1.2E-10	1.2E-10	9.1E-11	1.0E-10
NW	7.3E-11	9.8E-11	1.2E-10	1.2E-10	9.4E-11	1.0E-10
WNW	1.3E-10	1.7E-10	2.0E-10	2.0E-10	1.6E-10	1.7E-10
W	1.6E-10	2.2E-10	2.8E-10	2.8E-10	2.1E-10	2.3E-10
WSW	9.3E-11	1.3E-10	1.6E-10	1.6E-10	1.2E-10	1.4E-10
SW	5.7E-11	7.8E-11	9.5E-11	9.6E-11	7.5E-11	8.1E-11
SSW	6.9E-11	9.1E-11	1.1E-10	1.1E-10	8.8E-11	9.5E-11
S	8.9E-11	1.2E-10	1.4E-10	1.4E-10	1.1E-10	1.2E-10
SSE	2.1E-10	2.6E-10	3.0E-10	3.0E-10	2.6E-10	2.7E-10
SE	2.3E-10	2.9E-10	3.4E-10	3.4E-10	2.8E-10	3.0E-10
ESE	2.2E-10	2.9E-10	3.4E-10	3.5E-10	2.8E-10	3.0E-10
E	2.5E-10	3.3E-10	4.0E-10	4.0E-10	3.2E-10	3.5E-10
ENE	2.7E-10	3.6E-10	4.4E-10	4.5E-10	3.5E-10	3.8E-10
NE	1.6E-10	2.3E-10	2.8E-10	2.9E-10	2.2E-10	2.4E-10
NNE	1.2E-10	1.6E-10	2.0E-10	2.0E-10	1.5E-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
Jun 5, 1995 10:42 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

4.06E-05

At This Location: 1076 Meters East Northeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Plant 1, 1 = SILO, 2 = SIZE RED (Z010)

Dataset Name: 94-PLANT1-(I)-G2
Dataset Date: Jun 5, 1995 10:39 am
Wind File: WNDFILES\WIND94.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 1076 Meters East Northeast
Lifetime Fatal Cancer Risk: 4.32E-10

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	1.09E-07
BREAST	1.14E-07
R MAR	2.57E-05
LUNGS	2.30E-04
THYROID	1.08E-07
ENDOST	3.21E-04
RMNDR	6.80E-07
EFFEC	4.06E-05

RADIONUCLIDE EMISSIONS DURING THE YEAR 1994

Nuclide	Class	Size	Source #1 Ci/y	Source #2 Ci/y	TOTAL Ci/y
U-234	Y	0.30	1.5E-08	6.4E-09	2.1E-08
U-235	Y	1.00	9.4E-10	6.0E-10	1.5E-09
U-236	Y	1.00	9.4E-10	6.0E-10	1.5E-09
U-238	Y	0.30	1.0E-08	5.7E-09	1.6E-08
TH-228	Y	0.30	1.2E-08	4.8E-09	1.7E-08
TH-230	Y	0.30	7.2E-08	3.7E-09	7.6E-08
TH-232	Y	0.30	8.6E-09	1.7E-09	1.0E-08

SITE INFORMATION

Temperature: 12 degrees C
Precipitation: 98 cm/y
Mixing Height: 950 m

SOURCE INFORMATION

Source Number:	1	2
Stack Height (m):	14.30	6.10
Diameter (m):	0.76	0.46
Plume Rise Momentum (m/s): (Exit Velocity)	1.27E+01	1.67E+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

1076	1284	1866	2008	2610	2219	2533	1374	1703	2364
2424	1441	2278	1376	1664	1757	1712	1909	1937	1663

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
Jun 5, 1995 10:42 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Plant 1, 1 = SILO, 2 = SIZE RED (Z010)

Dataset Name: 94-PLANT1-(I)-G2
Dataset Date: Jun 5, 1995 10:39 am
Wind File: WNDFILES\WIND94.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	1.09E-07
BREAST	1.14E-07
R MAR	2.57E-05
LUNGS	2.30E-04
THYROID	1.08E-07
ENDOST	3.21E-04
RMNDR	6.80E-07
EFFEC	4.06E-05

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	5.72E-07
INHALATION	4.00E-05
AIR IMMERSION	1.55E-13
GROUND SURFACE	6.04E-09
INTERNAL	4.06E-05
EXTERNAL	6.04E-09
TOTAL	4.06E-05

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	4.14E-06
U-235	1.77E-07
U-236	1.76E-07
U-238	2.80E-06
TH-228	5.94E-06
TH-230	2.26E-05
TH-232	4.80E-06
TOTAL	4.06E-05

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	2.19E-11
BONE	1.44E-11
THYROID	1.89E-14
BREAST	1.78E-13
LUNG	3.93E-10
STOMACH	1.33E-13
BOWEL	1.63E-13
LIVER	7.58E-13
PANCREAS	9.13E-14
URINARY	9.36E-13
OTHER	1.12E-13
TOTAL	4.32E-10

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	2.45E-12
INHALATION	4.29E-10
AIR IMMERSION	3.58E-18
GROUND SURFACE	1.38E-13
INTERNAL	4.32E-10
EXTERNAL	1.38E-13
TOTAL	4.32E-10

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	5.39E-11
U-235	2.31E-12
U-236	2.25E-12
U-238	3.67E-11
TH-228	1.20E-10
TH-230	1.89E-10
TH-232	2.73E-11
TOTAL	4.32E-10

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

Direction	Distance (m) 1076	1284	1866	2008	2610	2219	2533
N	9.9E-06	8.3E-06	5.7E-06	5.2E-06	3.8E-06	4.7E-06	4.0E-06
NNW	1.1E-05	9.2E-06	6.1E-06	5.6E-06	4.0E-06	5.0E-06	4.2E-06
NW	1.0E-05	8.9E-06	6.2E-06	5.8E-06	4.3E-06	5.2E-06	4.4E-06
WNW	1.8E-05	1.5E-05	1.1E-05	9.9E-06	7.4E-06	8.9E-06	7.7E-06
W	2.8E-05	2.2E-05	1.4E-05	1.3E-05	8.9E-06	1.1E-05	9.3E-06
WSW	1.6E-05	1.3E-05	8.2E-06	7.5E-06	5.4E-06	6.6E-06	5.6E-06
SW	9.0E-06	7.4E-06	5.0E-06	4.6E-06	3.4E-06	4.1E-06	3.5E-06
SSW	9.8E-06	8.3E-06	5.8E-06	5.4E-06	4.1E-06	4.9E-06	4.2E-06
S	1.2E-05	1.0E-05	7.3E-06	6.8E-06	5.2E-06	6.1E-06	5.4E-06
SSE	2.4E-05	2.1E-05	1.7E-05	1.6E-05	1.3E-05	1.5E-05	1.3E-05
SE	2.7E-05	2.4E-05	1.8E-05	1.7E-05	1.4E-05	1.6E-05	1.4E-05
ESE	3.0E-05	2.6E-05	1.8E-05	1.7E-05	1.3E-05	1.6E-05	1.4E-05
E	3.5E-05	3.0E-05	2.1E-05	2.0E-05	1.5E-05	1.8E-05	1.5E-05
ENE	4.1E-05	3.4E-05	2.3E-05	2.1E-05	1.5E-05	1.9E-05	1.6E-05
NE	2.7E-05	2.2E-05	1.4E-05	1.3E-05	9.4E-06	1.2E-05	9.8E-06
NNE	1.9E-05	1.5E-05	1.0E-05	9.4E-06	6.7E-06	8.3E-06	7.0E-06

Direction	Distance (m) 1374	1703	2364	2424	1441	2278	1376
N	7.8E-06	6.2E-06	4.3E-06	4.2E-06	7.4E-06	4.5E-06	7.8E-06
NNW	8.6E-06	6.8E-06	4.6E-06	4.4E-06	8.1E-06	4.8E-06	8.6E-06
NW	8.4E-06	6.8E-06	4.8E-06	4.7E-06	8.0E-06	5.0E-06	8.4E-06
WNW	1.4E-05	1.2E-05	8.3E-06	8.1E-06	1.4E-05	8.6E-06	1.4E-05
W	2.0E-05	1.6E-05	1.0E-05	9.9E-06	1.9E-05	1.1E-05	2.0E-05
WSW	1.2E-05	9.2E-06	6.1E-06	5.9E-06	1.1E-05	6.4E-06	1.2E-05
SW	6.9E-06	5.5E-06	3.8E-06	3.7E-06	6.6E-06	4.0E-06	6.9E-06
SSW	7.8E-06	6.3E-06	4.5E-06	4.4E-06	7.4E-06	4.7E-06	7.8E-06
S	9.8E-06	8.0E-06	5.8E-06	5.6E-06	9.4E-06	6.0E-06	9.7E-06
SSE	2.1E-05	1.8E-05	1.4E-05	1.3E-05	2.0E-05	1.4E-05	2.0E-05
SE	2.3E-05	2.0E-05	1.5E-05	1.5E-05	2.2E-05	1.6E-05	2.3E-05
ESE	2.4E-05	2.0E-05	1.5E-05	1.4E-05	2.3E-05	1.5E-05	2.4E-05
E	2.8E-05	2.3E-05	1.6E-05	1.6E-05	2.7E-05	1.7E-05	2.8E-05
ENE	3.2E-05	2.5E-05	1.7E-05	1.7E-05	3.0E-05	1.8E-05	3.2E-05
NE	2.1E-05	1.6E-05	1.1E-05	1.0E-05	2.0E-05	1.1E-05	2.1E-05
NNE	1.4E-05	1.1E-05	7.6E-06	7.4E-06	1.4E-05	8.0E-06	1.4E-05

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

	Distance (m)					
Direction	1664	1757	1712	1909	1937	1663
N	6.4E-06	6.0E-06	6.2E-06	5.5E-06	5.4E-06	6.4E-06
NNW	6.9E-06	6.5E-06	6.7E-06	5.9E-06	5.8E-06	6.9E-06
NW	7.0E-06	6.6E-06	6.8E-06	6.1E-06	6.0E-06	7.0E-06
WNW	1.2E-05	1.1E-05	1.2E-05	1.0E-05	1.0E-05	1.2E-05
W	1.6E-05	1.5E-05	1.6E-05	1.4E-05	1.3E-05	1.6E-05
WSW	9.4E-06	8.8E-06	9.1E-06	8.0E-06	7.9E-06	9.4E-06
SW	5.6E-06	5.3E-06	5.5E-06	4.8E-06	4.8E-06	5.6E-06
SSW	6.5E-06	6.2E-06	6.3E-06	5.7E-06	5.6E-06	6.5E-06
S	8.2E-06	7.8E-06	8.0E-06	7.2E-06	7.1E-06	8.2E-06
SSE	1.8E-05	1.7E-05	1.8E-05	1.6E-05	1.6E-05	1.8E-05
SE	2.0E-05	1.9E-05	2.0E-05	1.8E-05	1.8E-05	2.0E-05
ESE	2.0E-05	2.0E-05	2.0E-05	1.8E-05	1.8E-05	2.0E-05
E	2.4E-05	2.2E-05	2.3E-05	2.1E-05	2.0E-05	2.4E-05
ENE	2.6E-05	2.5E-05	2.5E-05	2.2E-05	2.2E-05	2.6E-05
NE	1.6E-05	1.5E-05	1.6E-05	1.4E-05	1.4E-05	1.6E-05
NNE	1.2E-05	1.1E-05	1.1E-05	9.9E-06	9.8E-06	1.2E-05

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

Direction	Distance (m) 1076	1284	1866	2008	2610	2219	2533
N	1.1E-10	8.8E-11	5.9E-11	5.5E-11	4.0E-11	4.9E-11	4.1E-11
NNW	1.2E-10	9.7E-11	6.4E-11	5.8E-11	4.2E-11	5.2E-11	4.4E-11
NW	1.1E-10	9.5E-11	6.5E-11	6.0E-11	4.5E-11	5.4E-11	4.6E-11
WNW	1.9E-10	1.6E-10	1.1E-10	1.0E-10	7.8E-11	9.3E-11	8.0E-11
W	2.9E-10	2.3E-10	1.5E-10	1.3E-10	9.3E-11	1.2E-10	9.7E-11
WSW	1.7E-10	1.4E-10	8.6E-11	7.9E-11	5.6E-11	6.9E-11	5.9E-11
SW	9.5E-11	7.8E-11	5.2E-11	4.8E-11	3.5E-11	4.3E-11	3.6E-11
SSW	1.0E-10	8.8E-11	6.1E-11	5.7E-11	4.2E-11	5.1E-11	4.4E-11
S	1.3E-10	1.1E-10	7.7E-11	7.2E-11	5.5E-11	6.5E-11	5.7E-11
SSE	2.6E-10	2.3E-10	1.8E-10	1.7E-10	1.3E-10	1.5E-10	1.4E-10
SE	2.9E-10	2.6E-10	2.0E-10	1.8E-10	1.4E-10	1.7E-10	1.5E-10
ESE	3.2E-10	2.7E-10	2.0E-10	1.8E-10	1.4E-10	1.6E-10	1.4E-10
E	3.7E-10	3.2E-10	2.2E-10	2.1E-10	1.5E-10	1.9E-10	1.6E-10
ENE	4.3E-10	3.6E-10	2.4E-10	2.2E-10	1.6E-10	2.0E-10	1.7E-10
NE	2.9E-10	2.4E-10	1.5E-10	1.4E-10	9.8E-11	1.2E-10	1.0E-10
NNE	2.0E-10	1.6E-10	1.1E-10	9.8E-11	7.0E-11	8.7E-11	7.3E-11

Direction	Distance (m) 1374	1703	2364	2424	1441	2278	1376
N	8.2E-11	6.6E-11	4.5E-11	4.4E-11	7.8E-11	4.7E-11	8.2E-11
NNW	9.0E-11	7.1E-11	4.8E-11	4.6E-11	8.6E-11	5.0E-11	9.0E-11
NW	8.9E-11	7.2E-11	5.0E-11	4.9E-11	8.5E-11	5.3E-11	8.9E-11
WNW	1.5E-10	1.2E-10	8.7E-11	8.5E-11	1.4E-10	9.1E-11	1.5E-10
W	2.2E-10	1.6E-10	1.1E-10	1.0E-10	2.0E-10	1.1E-10	2.2E-10
WSW	1.2E-10	9.6E-11	6.4E-11	6.2E-11	1.2E-10	6.7E-11	1.2E-10
SW	7.3E-11	5.8E-11	4.0E-11	3.8E-11	6.9E-11	4.1E-11	7.3E-11
SSW	8.2E-11	6.7E-11	4.7E-11	4.6E-11	7.9E-11	4.9E-11	8.2E-11
S	1.0E-10	8.4E-11	6.1E-11	5.9E-11	9.9E-11	6.3E-11	1.0E-10
SSE	2.2E-10	1.9E-10	1.5E-10	1.4E-10	2.1E-10	1.5E-10	2.2E-10
SE	2.5E-10	2.1E-10	1.6E-10	1.5E-10	2.4E-10	1.6E-10	2.5E-10
ESE	2.6E-10	2.1E-10	1.5E-10	1.5E-10	2.5E-10	1.6E-10	2.6E-10
E	3.0E-10	2.4E-10	1.7E-10	1.7E-10	2.9E-10	1.8E-10	3.0E-10
ENE	3.4E-10	2.7E-10	1.8E-10	1.8E-10	3.2E-10	1.9E-10	3.4E-10
NE	2.2E-10	1.7E-10	1.1E-10	1.1E-10	2.1E-10	1.2E-10	2.2E-10
NNE	1.5E-10	1.2E-10	8.0E-11	7.7E-11	1.4E-10	8.4E-11	1.5E-10

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

	Distance (m)					
Direction	1664	1757	1712	1909	1937	1663
N	6.7E-11	6.3E-11	6.5E-11	5.8E-11	5.7E-11	6.7E-11
NNW	7.3E-11	6.8E-11	7.0E-11	6.2E-11	6.1E-11	7.3E-11
NW	7.4E-11	7.0E-11	7.1E-11	6.4E-11	6.3E-11	7.4E-11
WNW	1.3E-10	1.2E-10	1.2E-10	1.1E-10	1.1E-10	1.3E-10
W	1.7E-10	1.6E-10	1.6E-10	1.4E-10	1.4E-10	1.7E-10
WSW	9.9E-11	9.3E-11	9.6E-11	8.4E-11	8.2E-11	9.9E-11
SW	5.9E-11	5.6E-11	5.7E-11	5.1E-11	5.0E-11	5.9E-11
SSW	6.8E-11	6.5E-11	6.7E-11	6.0E-11	5.9E-11	6.8E-11
S	8.6E-11	8.2E-11	8.4E-11	7.5E-11	7.4E-11	8.6E-11
SSE	1.9E-10	1.9E-10	1.9E-10	1.7E-10	1.7E-10	1.9E-10
SE	2.1E-10	2.1E-10	2.1E-10	1.9E-10	1.9E-10	2.1E-10
ESE	2.2E-10	2.1E-10	2.1E-10	1.9E-10	1.9E-10	2.2E-10
E	2.5E-10	2.4E-10	2.4E-10	2.2E-10	2.1E-10	2.5E-10
ENE	2.7E-10	2.6E-10	2.7E-10	2.4E-10	2.3E-10	2.8E-10
NE	1.7E-10	1.6E-10	1.7E-10	1.5E-10	1.4E-10	1.7E-10
NNE	1.2E-10	1.2E-10	1.2E-10	1.0E-10	1.0E-10	1.2E-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
Jun 8, 1995 8:40 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

1.12E-01

At This Location: 1068 Meters Southeast

Source Category: REMEDIATION SITE
Source Type: Area
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Plant 7, Dismantling (RA #19)

Dataset Name: 94-PLANT7-(I)-G1
Dataset Date: Jun 8, 1995 8:36 am
Wind File: WNDFILES\WIND94.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 1068 Meters Southeast
Lifetime Fatal Cancer Risk: 1.43E-06

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	3.31E-04
BREAST	3.75E-04
R MAR	1.50E-02
LUNGS	8.45E-01
THYROID	3.23E-04
ENDOST	1.99E-01
RMNDR	8.59E-03
EFFEC	1.12E-01

RADIONUCLIDE EMISSIONS DURING THE YEAR 1994

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	1.00	2.0E-04	2.0E-04
U-235	Y	1.00	1.0E-05	1.0E-05
U-236	Y	1.00	7.6E-06	7.6E-06
U-238	Y	1.00	2.2E-04	2.2E-04
RA-226	W	1.00	1.4E-07	1.4E-07
RA-228	W	1.00	5.5E-07	5.5E-07
TH-228	Y	1.00	5.8E-06	5.8E-06
TH-230	Y	1.00	1.7E-05	1.7E-05
TH-232	Y	1.00	9.2E-07	9.2E-07
TH-234	Y	1.00	8.6E-04	8.6E-04

SITE INFORMATION

Temperature: 12 degrees C
Precipitation: 98 cm/y
Mixing Height: 950 m

SOURCE INFORMATION

Source Number: 1

Source Height (m): 5.00
Area (sq m): 2.40E+03

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

1238	1209	1992	1656	1372	1089	1163	1213	1244	1370
1361	1343	1230	1220	1804	1307	1075	1068	1626	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
Jun 8, 1995 8:40 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Area
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Plant 7, Dismantling (RA #19)

Dataset Name: 94-PLANT7-(I)-G1
Dataset Date: Jun 8, 1995 8:36 am
Wind File: WNDFILES\WIND94.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	3.31E-04
BREAST	3.75E-04
R MAR	1.50E-02
LUNGS	8.45E-01
THYROID	3.23E-04
ENDOST	1.99E-01
RMNDR	8.59E-03
EFFEC	1.12E-01

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	6.16E-03
INHALATION	1.06E-01
AIR IMMERSION	8.84E-09
GROUND SURFACE	6.28E-05
INTERNAL	1.12E-01
EXTERNAL	6.28E-05
TOTAL	1.12E-01

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	4.84E-02
U-235	2.42E-03
U-236	1.78E-03
U-238	4.82E-02
RA-226	4.61E-06
RA-228	7.39E-06
TH-228	2.65E-03
TH-230	7.77E-03
TH-232	5.95E-04
TH-234	1.24E-04
TOTAL	1.12E-01

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	1.47E-08
BONE	9.74E-09
THYROID	7.35E-11
BREAST	8.24E-10
LUNG	1.38E-06
STOMACH	5.58E-10
BOWEL	1.49E-09
LIVER	6.85E-10
PANCREAS	3.24E-10
URINARY	1.79E-08
OTHER	3.96E-10
TOTAL	1.43E-06

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	3.27E-08
INHALATION	1.39E-06
AIR IMMERSION	1.97E-13
GROUND SURFACE	1.44E-09
INTERNAL	1.42E-06
EXTERNAL	1.44E-09
TOTAL	1.43E-06

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	6.22E-07
U-235	3.18E-08
U-236	2.28E-08
U-238	6.24E-07
RA-226	6.13E-11
RA-228	7.57E-11
TH-228	5.31E-08
TH-230	6.37E-08
TH-232	3.35E-09
TH-234	3.96E-09
TOTAL	1.43E-06

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

	Distance (m)						
Direction	1238	1209	1992	1656	1372	1089	1163
N	2.2E-02	2.2E-02	1.0E-02	1.3E-02	1.8E-02	2.6E-02	2.4E-02
NNW	2.2E-02	2.3E-02	1.0E-02	1.4E-02	1.9E-02	2.8E-02	2.5E-02
NW	2.5E-02	2.6E-02	1.2E-02	1.6E-02	2.1E-02	3.1E-02	2.8E-02
WNW	4.4E-02	4.5E-02	2.0E-02	2.7E-02	3.7E-02	5.4E-02	4.8E-02
W	4.4E-02	4.6E-02	2.0E-02	2.7E-02	3.7E-02	5.5E-02	4.9E-02
WSW	2.9E-02	3.1E-02	1.4E-02	1.8E-02	2.5E-02	3.6E-02	3.3E-02
SW	2.0E-02	2.0E-02	9.2E-03	1.2E-02	1.7E-02	2.4E-02	2.2E-02
SSW	2.4E-02	2.5E-02	1.1E-02	1.5E-02	2.1E-02	3.0E-02	2.7E-02
S	8.8E-02	9.1E-02	4.1E-02	5.6E-02	7.5E-02	1.1E-01	9.6E-02
SSE	8.2E-02	8.5E-02	3.6E-02	5.0E-02	6.9E-02	1.0E-01	9.1E-02
SE	8.7E-02	9.1E-02	3.9E-02	5.3E-02	7.3E-02	1.1E-01	9.7E-02
ESE	8.0E-02	8.3E-02	3.5E-02	4.9E-02	6.7E-02	9.9E-02	8.9E-02
E	8.4E-02	8.8E-02	3.7E-02	5.1E-02	7.1E-02	1.0E-01	9.4E-02
ENE	8.2E-02	8.5E-02	3.7E-02	5.0E-02	6.9E-02	1.0E-01	9.1E-02
NE	5.0E-02	5.2E-02	2.2E-02	3.1E-02	4.2E-02	6.1E-02	5.5E-02
NNE	3.5E-02	3.6E-02	1.6E-02	2.2E-02	2.9E-02	4.3E-02	3.9E-02

	Distance (m)						
Direction	1213	1244	1370	1361	1343	1230	1220
N	2.2E-02	2.1E-02	1.8E-02	1.8E-02	1.9E-02	2.2E-02	2.2E-02
NNW	2.3E-02	2.2E-02	1.9E-02	1.9E-02	2.0E-02	2.3E-02	2.3E-02
NW	2.6E-02	2.5E-02	2.1E-02	2.1E-02	2.2E-02	2.5E-02	2.6E-02
WNW	4.5E-02	4.3E-02	3.7E-02	3.7E-02	3.8E-02	4.4E-02	4.5E-02
W	4.6E-02	4.4E-02	3.7E-02	3.8E-02	3.9E-02	4.5E-02	4.5E-02
WSW	3.1E-02	2.9E-02	2.5E-02	2.5E-02	2.6E-02	3.0E-02	3.0E-02
SW	2.0E-02	2.0E-02	1.7E-02	1.7E-02	1.7E-02	2.0E-02	2.0E-02
SSW	2.5E-02	2.4E-02	2.1E-02	2.1E-02	2.1E-02	2.5E-02	2.5E-02
S	9.1E-02	8.7E-02	7.6E-02	7.6E-02	7.8E-02	8.9E-02	9.0E-02
SSE	8.5E-02	8.1E-02	6.9E-02	7.0E-02	7.2E-02	8.3E-02	8.4E-02
SE	9.1E-02	8.7E-02	7.4E-02	7.4E-02	7.6E-02	8.8E-02	9.0E-02
ESE	8.3E-02	7.9E-02	6.7E-02	6.8E-02	7.0E-02	8.1E-02	8.2E-02
E	8.7E-02	8.4E-02	7.1E-02	7.2E-02	7.3E-02	8.5E-02	8.6E-02
ENE	8.5E-02	8.1E-02	6.9E-02	7.0E-02	7.2E-02	8.3E-02	8.4E-02
NE	5.1E-02	4.9E-02	4.2E-02	4.2E-02	4.3E-02	5.0E-02	5.1E-02
NNE	3.6E-02	3.5E-02	2.9E-02	3.0E-02	3.0E-02	3.5E-02	3.6E-02

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

	Distance (m)					
Direction	1804	1307	1075	1068	1626	1620
N	1.2E-02	2.0E-02	2.7E-02	2.7E-02	1.4E-02	1.4E-02
NNW	1.2E-02	2.0E-02	2.8E-02	2.8E-02	1.4E-02	1.4E-02
NW	1.4E-02	2.3E-02	3.2E-02	3.2E-02	1.6E-02	1.6E-02
WNW	2.3E-02	4.0E-02	5.5E-02	5.6E-02	2.8E-02	2.8E-02
W	2.4E-02	4.0E-02	5.6E-02	5.6E-02	2.8E-02	2.8E-02
WSW	1.6E-02	2.7E-02	3.7E-02	3.8E-02	1.9E-02	1.9E-02
SW	1.1E-02	1.8E-02	2.5E-02	2.5E-02	1.3E-02	1.3E-02
SSW	1.3E-02	2.2E-02	3.1E-02	3.1E-02	1.6E-02	1.6E-02
S	4.8E-02	8.1E-02	1.1E-01	1.1E-01	5.8E-02	5.8E-02
SSE	4.3E-02	7.5E-02	1.0E-01	1.1E-01	5.2E-02	5.2E-02
SE	4.6E-02	8.0E-02	1.1E-01	1.1E-01	5.5E-02	5.5E-02
ESE	4.2E-02	7.3E-02	1.0E-01	1.0E-01	5.0E-02	5.1E-02
E	4.4E-02	7.7E-02	1.1E-01	1.1E-01	5.3E-02	5.3E-02
ENE	4.3E-02	7.5E-02	1.0E-01	1.0E-01	5.2E-02	5.2E-02
NE	2.7E-02	4.5E-02	6.3E-02	6.3E-02	3.2E-02	3.2E-02
NNE	1.9E-02	3.2E-02	4.4E-02	4.4E-02	2.2E-02	2.2E-02

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

Direction	Distance (m) 1238	1209	1992	1656	1372	1089	1163
N	2.7E-07	2.8E-07	1.2E-07	1.6E-07	2.3E-07	3.3E-07	3.0E-07
NNW	2.8E-07	2.9E-07	1.2E-07	1.7E-07	2.3E-07	3.4E-07	3.1E-07
NW	3.1E-07	3.3E-07	1.4E-07	1.9E-07	2.6E-07	3.9E-07	3.5E-07
WNW	5.5E-07	5.7E-07	2.4E-07	3.3E-07	4.6E-07	6.8E-07	6.1E-07
W	5.6E-07	5.8E-07	2.5E-07	3.4E-07	4.7E-07	6.9E-07	6.2E-07
WSW	3.7E-07	3.8E-07	1.7E-07	2.3E-07	3.1E-07	4.6E-07	4.1E-07
SW	2.4E-07	2.5E-07	1.1E-07	1.5E-07	2.1E-07	3.0E-07	2.7E-07
SSW	3.0E-07	3.2E-07	1.4E-07	1.9E-07	2.6E-07	3.8E-07	3.4E-07
S	1.1E-06	1.2E-06	5.1E-07	7.1E-07	9.6E-07	1.3E-06	1.2E-06
SSE	1.0E-06	1.1E-06	4.6E-07	6.3E-07	8.7E-07	1.3E-06	1.2E-06
SE	1.1E-06	1.2E-06	4.9E-07	6.7E-07	9.3E-07	1.4E-06	1.2E-06
ESE	1.0E-06	1.1E-06	4.5E-07	6.1E-07	8.5E-07	1.3E-06	1.1E-06
E	1.1E-06	1.1E-06	4.7E-07	6.5E-07	9.0E-07	1.3E-06	1.2E-06
ENE	1.0E-06	1.1E-06	4.6E-07	6.3E-07	8.7E-07	1.3E-06	1.2E-06
NE	6.3E-07	6.5E-07	2.8E-07	3.8E-07	5.3E-07	7.8E-07	7.0E-07
NNE	4.4E-07	4.6E-07	2.0E-07	2.7E-07	3.7E-07	5.4E-07	4.9E-07

Direction	Distance (m) 1213	1244	1370	1361	1343	1230	1220
N	2.8E-07	2.7E-07	2.3E-07	2.3E-07	2.3E-07	2.7E-07	2.7E-07
NNW	2.9E-07	2.8E-07	2.3E-07	2.4E-07	2.4E-07	2.8E-07	2.8E-07
NW	3.2E-07	3.1E-07	2.6E-07	2.7E-07	2.7E-07	3.2E-07	3.2E-07
WNW	5.7E-07	5.5E-07	4.6E-07	4.7E-07	4.8E-07	5.6E-07	5.6E-07
W	5.8E-07	5.5E-07	4.7E-07	4.8E-07	4.9E-07	5.6E-07	5.7E-07
WSW	3.8E-07	3.7E-07	3.1E-07	3.1E-07	3.2E-07	3.7E-07	3.8E-07
SW	2.5E-07	2.4E-07	2.1E-07	2.1E-07	2.1E-07	2.5E-07	2.5E-07
SSW	3.2E-07	3.0E-07	2.6E-07	2.6E-07	2.7E-07	3.1E-07	3.1E-07
S	1.2E-06	1.1E-06	9.6E-07	9.7E-07	9.9E-07	1.1E-06	1.1E-06
SSE	1.1E-06	1.0E-06	8.8E-07	8.9E-07	9.1E-07	1.1E-06	1.1E-06
SE	1.2E-06	1.1E-06	9.3E-07	9.4E-07	9.7E-07	1.1E-06	1.1E-06
ESE	1.0E-06	1.0E-06	8.5E-07	8.6E-07	8.8E-07	1.0E-06	1.0E-06
E	1.1E-06	1.1E-06	9.0E-07	9.1E-07	9.3E-07	1.1E-06	1.1E-06
ENE	1.1E-06	1.0E-06	8.8E-07	8.9E-07	9.1E-07	1.1E-06	1.1E-06
NE	6.5E-07	6.2E-07	5.3E-07	5.3E-07	5.5E-07	6.3E-07	6.4E-07
NNE	4.5E-07	4.3E-07	3.7E-07	3.7E-07	3.8E-07	4.4E-07	4.5E-07

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

	Distance (m)					
Direction	1804	1307	1075	1068	1626	1620
N	1.4E-07	2.4E-07	3.4E-07	3.4E-07	1.7E-07	1.7E-07
NNW	1.5E-07	2.5E-07	3.5E-07	3.6E-07	1.8E-07	1.8E-07
NW	1.7E-07	2.9E-07	4.0E-07	4.0E-07	2.0E-07	2.0E-07
WNW	2.9E-07	5.0E-07	7.0E-07	7.1E-07	3.5E-07	3.5E-07
W	3.0E-07	5.1E-07	7.1E-07	7.1E-07	3.5E-07	3.5E-07
WSW	2.0E-07	3.4E-07	4.7E-07	4.7E-07	2.3E-07	2.3E-07
SW	1.3E-07	2.2E-07	3.1E-07	3.1E-07	1.5E-07	1.6E-07
SSW	1.6E-07	2.8E-07	3.9E-07	3.9E-07	1.9E-07	1.9E-07
S	6.1E-07	1.0E-06	1.4E-06	1.4E-06	7.3E-07	7.3E-07
SSE	5.4E-07	9.5E-07	1.3E-06	1.3E-06	6.5E-07	6.6E-07
SE	5.8E-07	1.0E-06	1.4E-06	1.4E-06	6.9E-07	7.0E-07
ESE	5.3E-07	9.2E-07	1.3E-06	1.3E-06	6.3E-07	6.4E-07
E	5.6E-07	9.8E-07	1.4E-06	1.4E-06	6.7E-07	6.7E-07
ENE	5.5E-07	9.5E-07	1.3E-06	1.3E-06	6.5E-07	6.6E-07
NE	3.3E-07	5.7E-07	7.9E-07	8.0E-07	3.9E-07	4.0E-07
NNE	2.3E-07	4.0E-07	5.5E-07	5.6E-07	2.8E-07	2.8E-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
Jun 8, 1995 8:40 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

8.92E-02

At This Location: 1223 Meters South

Source Category: REMEDIATION SITE
Source Type: Area
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Plant 7, Dismantling (RA #19)

Dataset Name: 94-PLANT7-(I)-G2
Dataset Date: Jun 8, 1995 8:37 am
Wind File: WNDFILES\WIND94.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 1223 Meters South
Lifetime Fatal Cancer Risk: 1.14E-06

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	2.48E-04
BREAST	2.81E-04
R MAR	1.16E-02
LUNGS	6.77E-01
THYROID	2.41E-04
ENDOST	1.53E-01
RMNDR	6.32E-03
EFFEC	8.92E-02

RADIONUCLIDE EMISSIONS DURING THE YEAR 1994

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	1.00	2.0E-04	2.0E-04
U-235	Y	1.00	1.0E-05	1.0E-05
U-236	Y	1.00	7.6E-06	7.6E-06
U-238	Y	1.00	2.2E-04	2.2E-04
RA-226	W	1.00	1.4E-07	1.4E-07
RA-228	W	1.00	5.5E-07	5.5E-07
TH-228	Y	1.00	5.8E-06	5.8E-06
TH-230	Y	1.00	1.7E-05	1.7E-05
TH-232	Y	1.00	9.2E-07	9.2E-07
TH-234	Y	1.00	8.6E-04	8.6E-04

SITE INFORMATION

Temperature: 12 degrees C
Precipitation: 98 cm/y
Mixing Height: 950 m

SOURCE INFORMATION

Source Number: 1

Source Height (m): 5.00
Area (sq m): 2.40E+03

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

1223	1554	2120	1773	2452	2397	2213	1654	1384	2183
2249	1725	2457	1689	1983	2075	2031	1948	1980	1741

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
Jun 8, 1995 8:40 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Area
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Plant 7, Dismantling (RA #19)

Dataset Name: 94-PLANT7-(I)-G2
Dataset Date: Jun 8, 1995 8:37 am
Wind File: WNDFILES\WIND94.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	2.48E-04
BREAST	2.81E-04
R MAR	1.16E-02
LUNGS	6.77E-01
THYROID	2.41E-04
ENDOST	1.53E-01
RMNDR	6.32E-03
EFFEC	8.92E-02

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	4.51E-03
INHALATION	8.46E-02
AIR IMMERSION	7.08E-09
GROUND SURFACE	4.80E-05
INTERNAL	8.92E-02
EXTERNAL	4.80E-05
TOTAL	8.92E-02

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	3.86E-02
U-235	1.93E-03
U-236	1.42E-03
U-238	3.84E-02
RA-226	3.52E-06
RA-228	5.58E-06
TH-228	2.12E-03
TH-230	6.21E-03
TH-232	4.76E-04
TH-234	9.49E-05
TOTAL	8.92E-02

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	1.13E-08
BONE	7.46E-09
THYROID	5.51E-11
BREAST	6.21E-10
LUNG	1.10E-06
STOMACH	4.17E-10
BOWEL	1.11E-09
LIVER	5.24E-10
PANCREAS	2.42E-10
URINARY	1.31E-08
OTHER	2.96E-10
TOTAL	1.14E-06

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	2.39E-08
INHALATION	1.11E-06
AIR IMMERSION	1.58E-13
GROUND SURFACE	1.10E-09
INTERNAL	1.14E-06
EXTERNAL	1.10E-09
TOTAL	1.14E-06

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	4.97E-07
U-235	2.53E-08
U-236	1.82E-08
U-238	4.99E-07
RA-226	4.82E-11
RA-228	5.82E-11
TH-228	4.25E-08
TH-230	5.10E-08
TH-232	2.68E-09
TH-234	3.12E-09
TOTAL	1.14E-06

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

	Distance (m)						
Direction	1223	1554	2120	1773	2452	2397	2213
N	2.2E-02	1.4E-02	8.7E-03	1.2E-02	6.9E-03	7.1E-03	8.1E-03
NNW	2.2E-02	1.5E-02	9.0E-03	1.2E-02	7.1E-03	7.4E-03	8.4E-03
NW	2.5E-02	1.7E-02	1.0E-02	1.3E-02	7.9E-03	8.2E-03	9.3E-03
WNW	4.4E-02	2.9E-02	1.7E-02	2.3E-02	1.4E-02	1.4E-02	1.6E-02
W	4.5E-02	3.0E-02	1.8E-02	2.4E-02	1.4E-02	1.5E-02	1.7E-02
WSW	3.0E-02	2.0E-02	1.2E-02	1.6E-02	9.4E-03	9.7E-03	1.1E-02
SW	2.0E-02	1.3E-02	8.0E-03	1.1E-02	6.3E-03	6.5E-03	7.4E-03
SSW	2.4E-02	1.6E-02	9.8E-03	1.3E-02	7.7E-03	8.0E-03	9.1E-03
S	8.9E-02	6.1E-02	3.6E-02	4.9E-02	2.9E-02	3.0E-02	3.4E-02
SSE	8.3E-02	5.5E-02	3.2E-02	4.4E-02	2.5E-02	2.6E-02	3.0E-02
SE	8.9E-02	5.9E-02	3.4E-02	4.7E-02	2.7E-02	2.8E-02	3.2E-02
ESE	8.1E-02	5.4E-02	3.2E-02	4.3E-02	2.5E-02	2.6E-02	2.9E-02
E	8.6E-02	5.7E-02	3.3E-02	4.5E-02	2.6E-02	2.7E-02	3.1E-02
ENE	8.3E-02	5.5E-02	3.3E-02	4.4E-02	2.6E-02	2.7E-02	3.0E-02
NE	5.0E-02	3.4E-02	2.0E-02	2.7E-02	1.6E-02	1.6E-02	1.8E-02
NNE	3.5E-02	2.3E-02	1.4E-02	1.9E-02	1.1E-02	1.1E-02	1.3E-02

	Distance (m)						
Direction	1654	1384	2183	2249	1725	2457	1689
N	1.3E-02	1.8E-02	8.3E-03	7.9E-03	1.2E-02	6.9E-03	1.3E-02
NNW	1.4E-02	1.8E-02	8.6E-03	8.2E-03	1.3E-02	7.1E-03	1.3E-02
NW	1.5E-02	2.0E-02	9.6E-03	9.1E-03	1.4E-02	7.9E-03	1.5E-02
WNW	2.6E-02	3.6E-02	1.6E-02	1.6E-02	2.5E-02	1.4E-02	2.5E-02
W	2.7E-02	3.6E-02	1.7E-02	1.6E-02	2.5E-02	1.4E-02	2.6E-02
WSW	1.8E-02	2.4E-02	1.1E-02	1.1E-02	1.7E-02	9.3E-03	1.7E-02
SW	1.2E-02	1.6E-02	7.6E-03	7.2E-03	1.1E-02	6.3E-03	1.2E-02
SSW	1.5E-02	2.0E-02	9.3E-03	8.9E-03	1.4E-02	7.7E-03	1.4E-02
S	5.6E-02	7.4E-02	3.5E-02	3.3E-02	5.2E-02	2.9E-02	5.4E-02
SSE	5.0E-02	6.7E-02	3.1E-02	2.9E-02	4.6E-02	2.5E-02	4.8E-02
SE	5.3E-02	7.2E-02	3.3E-02	3.1E-02	4.9E-02	2.7E-02	5.1E-02
ESE	4.8E-02	6.6E-02	3.0E-02	2.9E-02	4.5E-02	2.5E-02	4.7E-02
E	5.1E-02	6.9E-02	3.2E-02	3.0E-02	4.8E-02	2.6E-02	4.9E-02
ENE	5.0E-02	6.8E-02	3.1E-02	3.0E-02	4.6E-02	2.5E-02	4.8E-02
NE	3.0E-02	4.1E-02	1.9E-02	1.8E-02	2.8E-02	1.6E-02	2.9E-02
NNE	2.1E-02	2.9E-02	1.3E-02	1.3E-02	2.0E-02	1.1E-02	2.0E-02

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

	Distance (m)					
Direction	1983	2075	2031	1948	1980	1741
N	9.7E-03	9.0E-03	9.3E-03	9.9E-03	9.7E-03	1.2E-02
NNW	1.0E-02	9.3E-03	9.6E-03	1.0E-02	1.0E-02	1.2E-02
NW	1.1E-02	1.0E-02	1.1E-02	1.2E-02	1.1E-02	1.4E-02
WNW	1.9E-02	1.8E-02	1.9E-02	2.0E-02	1.9E-02	2.4E-02
W	2.0E-02	1.8E-02	1.9E-02	2.0E-02	2.0E-02	2.5E-02
WSW	1.3E-02	1.2E-02	1.3E-02	1.4E-02	1.3E-02	1.6E-02
SW	8.9E-03	8.2E-03	8.5E-03	9.1E-03	8.9E-03	1.1E-02
SSW	1.1E-02	1.0E-02	1.0E-02	1.1E-02	1.1E-02	1.4E-02
S	4.1E-02	3.8E-02	3.9E-02	4.2E-02	4.1E-02	5.1E-02
SSE	3.6E-02	3.3E-02	3.5E-02	3.7E-02	3.6E-02	4.5E-02
SE	3.9E-02	3.6E-02	3.7E-02	4.0E-02	3.9E-02	4.8E-02
ESE	3.5E-02	3.3E-02	3.4E-02	3.6E-02	3.5E-02	4.4E-02
E	3.7E-02	3.5E-02	3.6E-02	3.8E-02	3.7E-02	4.7E-02
ENE	3.7E-02	3.4E-02	3.5E-02	3.8E-02	3.7E-02	4.6E-02
NE	2.2E-02	2.1E-02	2.1E-02	2.3E-02	2.2E-02	2.8E-02
NNE	1.6E-02	1.4E-02	1.5E-02	1.6E-02	1.6E-02	1.9E-02

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

Direction	Distance (m) 1223	1554	2120	1773	2452	2397	2213
N	2.7E-07	1.8E-07	1.1E-07	1.4E-07	8.3E-08	8.7E-08	9.9E-08
NNW	2.8E-07	1.9E-07	1.1E-07	1.5E-07	8.6E-08	9.0E-08	1.0E-07
NW	3.2E-07	2.1E-07	1.2E-07	1.7E-07	9.7E-08	1.0E-07	1.1E-07
WNW	5.6E-07	3.7E-07	2.2E-07	3.0E-07	1.7E-07	1.8E-07	2.0E-07
W	5.7E-07	3.8E-07	2.2E-07	3.0E-07	1.7E-07	1.8E-07	2.1E-07
WSW	3.7E-07	2.5E-07	1.5E-07	2.0E-07	1.1E-07	1.2E-07	1.4E-07
SW	2.5E-07	1.6E-07	9.7E-08	1.3E-07	7.6E-08	7.9E-08	9.0E-08
SSW	3.1E-07	2.1E-07	1.2E-07	1.6E-07	9.4E-08	9.8E-08	1.1E-07
S	1.1E-06	7.8E-07	4.6E-07	6.3E-07	3.6E-07	3.8E-07	4.3E-07
SSE	1.1E-06	7.0E-07	4.1E-07	5.6E-07	3.2E-07	3.3E-07	3.8E-07
SE	1.1E-06	7.5E-07	4.4E-07	6.0E-07	3.4E-07	3.5E-07	4.0E-07
ESE	1.0E-06	6.8E-07	4.0E-07	5.4E-07	3.1E-07	3.2E-07	3.7E-07
E	1.1E-06	7.2E-07	4.2E-07	5.8E-07	3.3E-07	3.4E-07	3.9E-07
ENE	1.1E-06	7.0E-07	4.1E-07	5.6E-07	3.2E-07	3.3E-07	3.8E-07
NE	6.4E-07	4.2E-07	2.5E-07	3.4E-07	1.9E-07	2.0E-07	2.3E-07
NNE	4.4E-07	3.0E-07	1.7E-07	2.4E-07	1.4E-07	1.4E-07	1.6E-07

Direction	Distance (m) 1654	1384	2183	2249	1725	2457	1689
N	1.6E-07	2.2E-07	1.0E-07	9.6E-08	1.5E-07	8.3E-08	1.6E-07
NNW	1.7E-07	2.3E-07	1.0E-07	1.0E-07	1.6E-07	8.6E-08	1.6E-07
NW	1.9E-07	2.6E-07	1.2E-07	1.1E-07	1.8E-07	9.6E-08	1.8E-07
WNW	3.3E-07	4.5E-07	2.1E-07	2.0E-07	3.1E-07	1.7E-07	3.2E-07
W	3.4E-07	4.6E-07	2.1E-07	2.0E-07	3.2E-07	1.7E-07	3.3E-07
WSW	2.2E-07	3.0E-07	1.4E-07	1.3E-07	2.1E-07	1.1E-07	2.2E-07
SW	1.5E-07	2.0E-07	9.3E-08	8.8E-08	1.4E-07	7.6E-08	1.4E-07
SSW	1.8E-07	2.5E-07	1.1E-07	1.1E-07	1.7E-07	9.4E-08	1.8E-07
S	7.1E-07	9.4E-07	4.4E-07	4.2E-07	6.6E-07	3.6E-07	6.8E-07
SSE	6.3E-07	8.6E-07	3.9E-07	3.7E-07	5.9E-07	3.2E-07	6.1E-07
SE	6.7E-07	9.2E-07	4.1E-07	3.9E-07	6.2E-07	3.4E-07	6.5E-07
ESE	6.1E-07	8.4E-07	3.8E-07	3.6E-07	5.7E-07	3.1E-07	5.9E-07
E	6.5E-07	8.8E-07	4.0E-07	3.8E-07	6.0E-07	3.3E-07	6.3E-07
ENE	6.3E-07	8.6E-07	3.9E-07	3.7E-07	5.9E-07	3.2E-07	6.1E-07
NE	3.8E-07	5.2E-07	2.4E-07	2.3E-07	3.5E-07	1.9E-07	3.7E-07
NNE	2.7E-07	3.6E-07	1.7E-07	1.6E-07	2.5E-07	1.4E-07	2.6E-07

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

	Distance (m)					
Direction	1983	2075	2031	1948	1980	1741
N	1.2E-07	1.1E-07	1.1E-07	1.2E-07	1.2E-07	1.5E-07
NNW	1.2E-07	1.1E-07	1.2E-07	1.3E-07	1.2E-07	1.5E-07
NW	1.4E-07	1.3E-07	1.3E-07	1.4E-07	1.4E-07	1.7E-07
WNW	2.4E-07	2.2E-07	2.3E-07	2.5E-07	2.4E-07	3.0E-07
W	2.5E-07	2.3E-07	2.4E-07	2.6E-07	2.5E-07	3.1E-07
WSW	1.6E-07	1.5E-07	1.6E-07	1.7E-07	1.6E-07	2.1E-07
SW	1.1E-07	1.0E-07	1.0E-07	1.1E-07	1.1E-07	1.4E-07
SSW	1.4E-07	1.3E-07	1.3E-07	1.4E-07	1.4E-07	1.7E-07
S	5.2E-07	4.8E-07	5.0E-07	5.3E-07	5.2E-07	6.5E-07
SSE	4.6E-07	4.2E-07	4.4E-07	4.7E-07	4.6E-07	5.8E-07
SE	4.9E-07	4.5E-07	4.7E-07	5.0E-07	4.9E-07	6.1E-07
ESE	4.5E-07	4.1E-07	4.3E-07	4.6E-07	4.5E-07	5.6E-07
E	4.7E-07	4.4E-07	4.5E-07	4.9E-07	4.7E-07	5.9E-07
ENE	4.6E-07	4.3E-07	4.4E-07	4.8E-07	4.6E-07	5.8E-07
NE	2.8E-07	2.6E-07	2.7E-07	2.9E-07	2.8E-07	3.5E-07
NNE	2.0E-07	1.8E-07	1.9E-07	2.0E-07	2.0E-07	2.4E-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 28, 1995 1:23 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent (mrem/year)
2.94E-02

At This Location: 969 Meters East Northeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Plant 8, 1 = Process, 2 = bldg vent

Dataset Name: 94-PLANT8-(I)-G1
Dataset Date: Apr 28, 1995 1:23 pm
Wind File: WNDFILES\WIND94.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 969 Meters East Northeast
Lifetime Fatal Cancer Risk: 3.83E-07

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	9.47E-05
BREAST	1.08E-04
R MAR	2.33E-03
LUNGS	2.27E-01
THYROID	9.22E-05
ENDOST	3.23E-02
RMNDR	2.62E-03
EFFEC	2.94E-02

RADIONUCLIDE EMISSIONS DURING THE YEAR 1994

Nuclide	Class	Size	Source #1 Ci/y	Source #2 Ci/y	TOTAL Ci/y
U-234	Y	1.00	6.6E-05	9.5E-06	7.6E-05
U-235	Y	1.00	3.5E-06	5.1E-07	4.1E-06
U-236	Y	1.00	2.4E-06	3.5E-07	2.8E-06
U-238	Y	1.00	8.8E-05	1.2E-05	1.0E-04
RA-226	W	1.00	5.9E-08	8.5E-09	6.8E-08
RA-228	W	1.00	2.4E-07	3.4E-08	2.7E-07
TH-228	Y	1.00	2.5E-06	3.6E-07	2.9E-06
TH-230	Y	1.00	1.8E-07	2.5E-08	2.0E-07
TH-232	Y	1.00	4.0E-07	5.6E-08	4.5E-07
TH-234	Y	1.00	3.7E-04	5.3E-05	4.2E-04

SITE INFORMATION

Temperature:	12 degrees C
Precipitation:	98 cm/y
Mixing Height:	950 m

SOURCE INFORMATION

Source Number:	1	2
Stack Height (m):	13.72	15.60
Diameter (m):	0.20	1.00
Plume Rise Momentum (m/s): (Exit Velocity)	1.31E+01	1.14E+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 28, 1995 1:23 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Plant 8, 1 = Process, 2 = bldg vent

Dataset Name: 94-PLANT8-(I)-G1
Dataset Date: Apr 28, 1995 1:23 pm
Wind File: WNDFILES\WIND94.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	9.47E-05
BREAST	1.08E-04
R MAR	2.33E-03
LUNGS	2.27E-01
THYROID	9.22E-05
ENDOST	3.23E-02
RMNDR	2.62E-03
EFFEC	2.94E-02

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	1.86E-03
INHALATION	2.75E-02
AIR IMMERSION	2.74E-09
GROUND SURFACE	1.83E-05
INTERNAL	2.93E-02
EXTERNAL	1.83E-05
TOTAL	2.94E-02

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	1.25E-02
U-235	6.35E-04
U-236	4.33E-04
U-238	1.47E-02
RA-226	1.58E-06
RA-228	2.56E-06
TH-228	8.56E-04
TH-230	6.00E-05
TH-232	1.93E-04
TH-234	4.25E-05
TOTAL	2.94E-02

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	2.62E-09
BONE	1.72E-09
THYROID	2.11E-11
BREAST	2.40E-10
LUNG	3.72E-07
STOMACH	1.66E-10
BOWEL	4.85E-10
LIVER	1.51E-10
PANCREAS	9.34E-11
URINARY	5.47E-09
OTHER	1.14E-10
TOTAL	3.83E-07

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	1.00E-08
INHALATION	3.73E-07
AIR IMMERSION	6.10E-14
GROUND SURFACE	4.19E-10
INTERNAL	3.83E-07
EXTERNAL	4.19E-10
TOTAL	3.83E-07

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	1.60E-07
U-235	8.30E-09
U-236	5.54E-09
U-238	1.89E-07
RA-226	2.03E-11
RA-228	2.57E-11
TH-228	1.72E-08
TH-230	4.91E-10
TH-232	1.09E-09
TH-234	1.31E-09
TOTAL	3.83E-07

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

	Distance (m)						
Direction	1252	1207	1926	1561	1265	969	1070
N	5.7E-03	6.0E-03	3.4E-03	4.4E-03	5.7E-03	7.5E-03	6.8E-03
NNW	6.2E-03	6.5E-03	3.6E-03	4.7E-03	6.1E-03	8.3E-03	7.4E-03
NW	6.6E-03	6.9E-03	4.0E-03	5.1E-03	6.5E-03	8.6E-03	7.8E-03
WNW	1.1E-02	1.2E-02	6.7E-03	8.6E-03	1.1E-02	1.4E-02	1.3E-02
W	1.3E-02	1.4E-02	7.4E-03	9.8E-03	1.3E-02	1.8E-02	1.6E-02
WSW	8.3E-03	8.6E-03	4.8E-03	6.3E-03	8.2E-03	1.1E-02	1.0E-02
SW	5.2E-03	5.4E-03	3.1E-03	4.1E-03	5.2E-03	6.9E-03	6.2E-03
SSW	6.2E-03	6.5E-03	3.8E-03	4.9E-03	6.1E-03	8.0E-03	7.3E-03
S	6.7E-03	6.9E-03	4.8E-03	5.6E-03	6.6E-03	8.3E-03	7.7E-03
SSE	1.9E-02	1.9E-02	1.2E-02	1.5E-02	1.8E-02	2.3E-02	2.1E-02
SE	2.0E-02	2.1E-02	1.3E-02	1.6E-02	2.0E-02	2.5E-02	2.3E-02
ESE	2.0E-02	2.0E-02	1.2E-02	1.5E-02	1.9E-02	2.5E-02	2.3E-02
E	2.2E-02	2.2E-02	1.3E-02	1.7E-02	2.1E-02	2.8E-02	2.5E-02
ENE	2.2E-02	2.3E-02	1.3E-02	1.7E-02	2.2E-02	2.9E-02	2.7E-02
NE	1.4E-02	1.5E-02	8.0E-03	1.1E-02	1.4E-02	1.9E-02	1.7E-02
NNE	9.7E-03	1.0E-02	5.6E-03	7.4E-03	9.6E-03	1.3E-02	1.2E-02

	Distance (m)						
Direction	1137	1171	1312	1308	1318	1238	1236
N	6.4E-03	6.2E-03	5.4E-03	5.5E-03	5.4E-03	5.8E-03	5.8E-03
NNW	6.9E-03	6.7E-03	5.9E-03	5.9E-03	5.8E-03	6.3E-03	6.3E-03
NW	7.4E-03	7.1E-03	6.3E-03	6.3E-03	6.2E-03	6.7E-03	6.7E-03
WNW	1.2E-02	1.2E-02	1.1E-02	1.1E-02	1.1E-02	1.1E-02	1.1E-02
W	1.5E-02	1.4E-02	1.2E-02	1.2E-02	1.2E-02	1.3E-02	1.3E-02
WSW	9.3E-03	9.0E-03	7.8E-03	7.8E-03	7.8E-03	8.4E-03	8.4E-03
SW	5.8E-03	5.6E-03	5.0E-03	5.0E-03	4.9E-03	5.3E-03	5.3E-03
SSW	6.9E-03	6.7E-03	5.9E-03	5.9E-03	5.9E-03	6.3E-03	6.3E-03
S	7.3E-03	7.1E-03	6.4E-03	6.4E-03	6.4E-03	6.8E-03	6.8E-03
SSE	2.0E-02	2.0E-02	1.8E-02	1.8E-02	1.8E-02	1.9E-02	1.9E-02
SE	2.2E-02	2.2E-02	1.9E-02	1.9E-02	1.9E-02	2.1E-02	2.1E-02
ESE	2.2E-02	2.1E-02	1.9E-02	1.9E-02	1.8E-02	2.0E-02	2.0E-02
E	2.4E-02	2.3E-02	2.0E-02	2.1E-02	2.0E-02	2.2E-02	2.2E-02
ENE	2.5E-02	2.4E-02	2.1E-02	2.1E-02	2.1E-02	2.2E-02	2.3E-02
NE	1.6E-02	1.5E-02	1.3E-02	1.3E-02	1.3E-02	1.4E-02	1.4E-02
NNE	1.1E-02	1.0E-02	9.2E-03	9.2E-03	9.1E-03	9.8E-03	9.9E-03

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

	Distance (m)					
Direction	1850	1382	1190	1186	1731	1695
N	3.6E-03	5.1E-03	6.1E-03	6.1E-03	3.9E-03	4.0E-03
NNW	3.8E-03	5.5E-03	6.6E-03	6.6E-03	4.2E-03	4.3E-03
NW	4.2E-03	5.9E-03	7.0E-03	7.0E-03	4.5E-03	4.6E-03
WNW	7.0E-03	1.0E-02	1.2E-02	1.2E-02	7.6E-03	7.8E-03
W	7.8E-03	1.2E-02	1.4E-02	1.4E-02	8.5E-03	8.8E-03
WSW	5.0E-03	7.3E-03	8.8E-03	8.8E-03	5.5E-03	5.6E-03
SW	3.3E-03	4.7E-03	5.5E-03	5.6E-03	3.6E-03	3.7E-03
SSW	4.0E-03	5.6E-03	6.5E-03	6.6E-03	4.3E-03	4.4E-03
S	5.0E-03	6.1E-03	7.0E-03	7.0E-03	5.2E-03	5.3E-03
SSE	1.2E-02	1.7E-02	2.0E-02	2.0E-02	1.3E-02	1.4E-02
SE	1.3E-02	1.8E-02	2.1E-02	2.1E-02	1.4E-02	1.5E-02
ESE	1.2E-02	1.8E-02	2.1E-02	2.1E-02	1.4E-02	1.4E-02
E	1.3E-02	1.9E-02	2.3E-02	2.3E-02	1.5E-02	1.5E-02
ENE	1.4E-02	2.0E-02	2.4E-02	2.4E-02	1.5E-02	1.5E-02
NE	8.4E-03	1.2E-02	1.5E-02	1.5E-02	9.2E-03	9.5E-03
NNE	5.9E-03	8.6E-03	1.0E-02	1.0E-02	6.5E-03	6.7E-03

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

Direction	Distance (m) 1252	1207	1926	1561	1265	969	1070
N	7.3E-08	7.6E-08	4.3E-08	5.6E-08	7.2E-08	9.6E-08	8.7E-08
NNW	7.9E-08	8.3E-08	4.5E-08	6.0E-08	7.8E-08	1.1E-07	9.5E-08
NW	8.5E-08	8.8E-08	5.0E-08	6.5E-08	8.4E-08	1.1E-07	1.0E-07
WNW	1.4E-07	1.5E-07	8.5E-08	1.1E-07	1.4E-07	1.9E-07	1.7E-07
W	1.7E-07	1.8E-07	9.4E-08	1.3E-07	1.7E-07	2.3E-07	2.1E-07
WSW	1.1E-07	1.1E-07	6.0E-08	8.0E-08	1.0E-07	1.4E-07	1.3E-07
SW	6.6E-08	6.9E-08	3.9E-08	5.1E-08	6.5E-08	8.8E-08	7.9E-08
SSW	7.9E-08	8.2E-08	4.7E-08	6.1E-08	7.8E-08	1.0E-07	9.3E-08
S	8.5E-08	8.8E-08	6.1E-08	7.1E-08	8.4E-08	1.1E-07	9.8E-08
SSE	2.4E-07	2.5E-07	1.5E-07	1.9E-07	2.4E-07	3.0E-07	2.8E-07
SE	2.6E-07	2.7E-07	1.6E-07	2.1E-07	2.6E-07	3.3E-07	3.1E-07
ESE	2.5E-07	2.6E-07	1.5E-07	2.0E-07	2.5E-07	3.2E-07	3.0E-07
E	2.8E-07	2.9E-07	1.7E-07	2.2E-07	2.8E-07	3.6E-07	3.3E-07
ENE	2.9E-07	3.0E-07	1.7E-07	2.2E-07	2.9E-07	3.8E-07	3.5E-07
NE	1.8E-07	1.9E-07	1.0E-07	1.4E-07	1.8E-07	2.5E-07	2.2E-07
NNE	1.3E-07	1.3E-07	7.2E-08	9.5E-08	1.2E-07	1.7E-07	1.5E-07

Direction	Distance (m) 1137	1171	1312	1308	1318	1238	1236
N	8.1E-08	7.9E-08	6.9E-08	6.9E-08	6.9E-08	7.4E-08	7.4E-08
NNW	8.9E-08	8.6E-08	7.5E-08	7.5E-08	7.4E-08	8.0E-08	8.0E-08
NW	9.4E-08	9.1E-08	8.0E-08	8.0E-08	8.0E-08	8.6E-08	8.6E-08
WNW	1.6E-07	1.5E-07	1.4E-07	1.4E-07	1.4E-07	1.5E-07	1.5E-07
W	1.9E-07	1.9E-07	1.6E-07	1.6E-07	1.6E-07	1.7E-07	1.7E-07
WSW	1.2E-07	1.2E-07	1.0E-07	1.0E-07	1.0E-07	1.1E-07	1.1E-07
SW	7.4E-08	7.2E-08	6.3E-08	6.3E-08	6.2E-08	6.7E-08	6.7E-08
SSW	8.8E-08	8.5E-08	7.5E-08	7.5E-08	7.5E-08	8.0E-08	8.0E-08
S	9.3E-08	9.0E-08	8.2E-08	8.2E-08	8.1E-08	8.6E-08	8.6E-08
SSE	2.6E-07	2.6E-07	2.3E-07	2.3E-07	2.3E-07	2.5E-07	2.5E-07
SE	2.9E-07	2.8E-07	2.5E-07	2.5E-07	2.5E-07	2.7E-07	2.7E-07
ESE	2.8E-07	2.7E-07	2.4E-07	2.4E-07	2.4E-07	2.6E-07	2.6E-07
E	3.1E-07	3.0E-07	2.7E-07	2.7E-07	2.6E-07	2.8E-07	2.8E-07
ENE	3.2E-07	3.1E-07	2.7E-07	2.7E-07	2.7E-07	2.9E-07	2.9E-07
NE	2.0E-07	2.0E-07	1.7E-07	1.7E-07	1.7E-07	1.8E-07	1.8E-07
NNE	1.4E-07	1.4E-07	1.2E-07	1.2E-07	1.2E-07	1.3E-07	1.3E-07

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

	Distance (m)					
Direction	1850	1382	1190	1186	1731	1695
N	4.5E-08	6.5E-08	7.7E-08	7.8E-08	4.9E-08	5.1E-08
NNW	4.8E-08	7.0E-08	8.4E-08	8.4E-08	5.2E-08	5.4E-08
NW	5.2E-08	7.5E-08	9.0E-08	9.0E-08	5.7E-08	5.9E-08
WNW	9.0E-08	1.3E-07	1.5E-07	1.5E-07	9.8E-08	1.0E-07
W	1.0E-07	1.5E-07	1.8E-07	1.8E-07	1.1E-07	1.1E-07
WSW	6.4E-08	9.4E-08	1.1E-07	1.1E-07	7.0E-08	7.2E-08
SW	4.1E-08	5.9E-08	7.0E-08	7.1E-08	4.5E-08	4.6E-08
SSW	5.0E-08	7.1E-08	8.4E-08	8.4E-08	5.4E-08	5.6E-08
S	6.2E-08	7.8E-08	8.9E-08	8.9E-08	6.5E-08	6.6E-08
SSE	1.6E-07	2.2E-07	2.5E-07	2.6E-07	1.7E-07	1.8E-07
SE	1.7E-07	2.4E-07	2.8E-07	2.8E-07	1.9E-07	1.9E-07
ESE	1.6E-07	2.3E-07	2.7E-07	2.7E-07	1.7E-07	1.8E-07
E	1.7E-07	2.5E-07	3.0E-07	3.0E-07	1.9E-07	2.0E-07
ENE	1.8E-07	2.6E-07	3.1E-07	3.1E-07	1.9E-07	2.0E-07
NE	1.1E-07	1.6E-07	1.9E-07	1.9E-07	1.2E-07	1.2E-07
NNE	7.6E-08	1.1E-07	1.3E-07	1.3E-07	8.3E-08	8.5E-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 27, 1995 3:41 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

2.18E-02

At This Location: 1265 Meters East Northeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Plant 8, 1 = Process, 2 = bldg vent

Dataset Name: 94-PLANT8-(I)-G2
Dataset Date: Apr 27, 1995 3:27 pm
Wind File: WNDFILES\WIND94.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 1265 Meters East Northeast
Lifetime Fatal Cancer Risk: 2.85E-07

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	6.97E-05
BREAST	7.94E-05
R MAR	1.71E-03
LUNGS	1.69E-01
THYROID	6.78E-05
ENDOST	2.37E-02
RMNDR	1.92E-03
EFFEC	2.18E-02

RADIONUCLIDE EMISSIONS DURING THE YEAR 1994

Nuclide	Class	Size	Source #1 Ci/y	Source #2 Ci/y	TOTAL Ci/y
U-234	Y	1.00	6.6E-05	9.5E-06	7.6E-05
U-235	Y	1.00	3.5E-06	5.1E-07	4.1E-06
U-236	Y	1.00	2.4E-06	3.5E-07	2.8E-06
U-238	Y	1.00	8.8E-05	1.2E-05	1.0E-04
RA-226	W	1.00	5.9E-08	8.5E-09	6.8E-08
RA-228	W	1.00	2.4E-07	3.4E-08	2.7E-07
TH-228	Y	1.00	2.5E-06	3.6E-07	2.9E-06
TH-230	Y	1.00	1.8E-07	2.5E-08	2.0E-07
TH-232	Y	1.00	4.0E-07	5.6E-08	4.5E-07
TH-234	Y	1.00	3.7E-04	5.3E-05	4.2E-04

SITE INFORMATION

Temperature:	12 degrees C
Precipitation:	98 cm/y
Mixing Height:	950 m

SOURCE INFORMATION

Source Number:	1	2
Stack Height (m):	13.72	15.60
Diameter (m):	0.20	1.00
Plume Rise Momentum (m/s): (Exit Velocity)	1.31E+01	1.14E+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 27, 1995 3:41 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Plant 8, 1 = Process, 2 = bldg vent

Dataset Name: 94-PLANT8-(I)-G2
Dataset Date: Apr 27, 1995 3:27 pm
Wind File: WNDFILES\WIND94.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	6.97E-05
BREAST	7.94E-05
R MAR	1.71E-03
LUNGS	1.69E-01
THYROID	6.78E-05
ENDOST	2.37E-02
RMNDR	1.92E-03
EFFEC	2.18E-02

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	1.36E-03
INHALATION	2.05E-02
AIR IMMERSION	2.04E-09
GROUND SURFACE	1.36E-05
INTERNAL	2.18E-02
EXTERNAL	1.36E-05
TOTAL	2.18E-02

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	9.27E-03
U-235	4.72E-04
U-236	3.22E-04
U-238	1.09E-02
RA-226	1.16E-06
RA-228	1.88E-06
TH-228	6.37E-04
TH-230	4.46E-05
TH-232	1.43E-04
TH-234	3.13E-05
TOTAL	2.18E-02

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	1.92E-09
BONE	1.26E-09
THYROID	1.56E-11
BREAST	1.77E-10
LUNG	2.77E-07
STOMACH	1.22E-10
BOWEL	3.57E-10
LIVER	1.12E-10
PANCREAS	6.88E-11
URINARY	4.00E-09
OTHER	8.42E-11
TOTAL	2.85E-07

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	7.33E-09
INHALATION	2.77E-07
AIR IMMERSION	4.54E-14
GROUND SURFACE	3.13E-10
INTERNAL	2.85E-07
EXTERNAL	3.13E-10
TOTAL	2.85E-07

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	1.19E-07
U-235	6.18E-09
U-236	4.12E-09
U-238	1.41E-07
RA-226	1.51E-11
RA-228	1.90E-11
TH-228	1.28E-08
TH-230	3.65E-10
TH-232	8.08E-10
TH-234	9.70E-10
TOTAL	2.85E-07

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

	Distance (m)						
Direction	1265	1537	2001	1897	2573	2273	2298
N	5.6E-03	4.4E-03	3.2E-03	3.4E-03	2.3E-03	2.7E-03	2.7E-03
NNW	6.0E-03	4.7E-03	3.4E-03	3.6E-03	2.4E-03	2.8E-03	2.8E-03
NW	6.4E-03	5.1E-03	3.7E-03	3.9E-03	2.6E-03	3.1E-03	3.1E-03
WNW	1.1E-02	8.7E-03	6.2E-03	6.7E-03	4.5E-03	5.3E-03	5.2E-03
W	1.3E-02	9.9E-03	6.9E-03	7.4E-03	4.8E-03	5.7E-03	5.6E-03
WSW	8.1E-03	6.3E-03	4.4E-03	4.8E-03	3.1E-03	3.7E-03	3.7E-03
SW	5.1E-03	4.0E-03	2.9E-03	3.1E-03	2.1E-03	2.4E-03	2.4E-03
SSW	6.0E-03	4.8E-03	3.5E-03	3.7E-03	2.5E-03	3.0E-03	2.9E-03
S	6.5E-03	5.5E-03	4.6E-03	4.8E-03	4.0E-03	4.3E-03	4.3E-03
SSE	1.8E-02	1.5E-02	1.1E-02	1.2E-02	8.0E-03	9.4E-03	9.3E-03
SE	2.0E-02	1.6E-02	1.2E-02	1.3E-02	8.6E-03	1.0E-02	1.0E-02
ESE	1.9E-02	1.5E-02	1.1E-02	1.2E-02	8.0E-03	9.4E-03	9.3E-03
E	2.1E-02	1.7E-02	1.2E-02	1.3E-02	8.6E-03	1.0E-02	1.0E-02
ENE	2.2E-02	1.7E-02	1.2E-02	1.3E-02	8.5E-03	1.0E-02	1.0E-02
NE	1.4E-02	1.1E-02	7.5E-03	8.1E-03	5.2E-03	6.3E-03	6.2E-03
NNE	9.5E-03	7.5E-03	5.3E-03	5.7E-03	3.7E-03	4.4E-03	4.3E-03

	Distance (m)						
Direction	1631	1468	2305	2372	1699	2333	1596
N	4.1E-03	4.7E-03	2.6E-03	2.5E-03	3.9E-03	2.6E-03	4.2E-03
NNW	4.4E-03	5.0E-03	2.8E-03	2.7E-03	4.2E-03	2.7E-03	4.5E-03
NW	4.8E-03	5.4E-03	3.0E-03	2.9E-03	4.5E-03	3.0E-03	4.9E-03
WNW	8.1E-03	9.2E-03	5.2E-03	5.0E-03	7.7E-03	5.1E-03	8.3E-03
W	9.2E-03	1.1E-02	5.6E-03	5.4E-03	8.6E-03	5.5E-03	9.4E-03
WSW	5.8E-03	6.7E-03	3.6E-03	3.5E-03	5.5E-03	3.6E-03	6.0E-03
SW	3.7E-03	4.3E-03	2.4E-03	2.3E-03	3.6E-03	2.4E-03	3.8E-03
SSW	4.5E-03	5.1E-03	2.9E-03	2.8E-03	4.3E-03	2.9E-03	4.6E-03
S	5.3E-03	5.7E-03	4.3E-03	4.2E-03	5.1E-03	4.2E-03	5.4E-03
SSE	1.4E-02	1.6E-02	9.3E-03	8.9E-03	1.3E-02	9.1E-03	1.4E-02
SE	1.5E-02	1.7E-02	9.9E-03	9.6E-03	1.5E-02	9.8E-03	1.6E-02
ESE	1.4E-02	1.6E-02	9.3E-03	8.9E-03	1.4E-02	9.1E-03	1.5E-02
E	1.6E-02	1.8E-02	1.0E-02	9.6E-03	1.5E-02	9.8E-03	1.6E-02
ENE	1.6E-02	1.8E-02	1.0E-02	9.6E-03	1.5E-02	9.8E-03	1.6E-02
NE	9.9E-03	1.1E-02	6.1E-03	5.9E-03	9.4E-03	6.0E-03	1.0E-02
NNE	6.9E-03	7.9E-03	4.3E-03	4.2E-03	6.5E-03	4.3E-03	7.1E-03

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

	Distance (m)					
Direction	1913	2005	1958	1839	1870	1809
N	3.4E-03	3.2E-03	3.3E-03	3.5E-03	3.5E-03	3.6E-03
NNW	3.6E-03	3.3E-03	3.5E-03	3.8E-03	3.7E-03	3.8E-03
NW	3.9E-03	3.7E-03	3.8E-03	4.1E-03	4.0E-03	4.2E-03
WNW	6.6E-03	6.2E-03	6.4E-03	7.0E-03	6.8E-03	7.1E-03
W	7.3E-03	6.8E-03	7.1E-03	7.7E-03	7.6E-03	7.9E-03
WSW	4.7E-03	4.4E-03	4.6E-03	5.0E-03	4.9E-03	5.1E-03
SW	3.1E-03	2.9E-03	3.0E-03	3.2E-03	3.2E-03	3.3E-03
SSW	3.7E-03	3.5E-03	3.6E-03	3.9E-03	3.8E-03	4.0E-03
S	4.7E-03	4.6E-03	4.7E-03	4.9E-03	4.8E-03	4.9E-03
SSE	1.2E-02	1.1E-02	1.1E-02	1.2E-02	1.2E-02	1.3E-02
SE	1.3E-02	1.2E-02	1.2E-02	1.3E-02	1.3E-02	1.3E-02
ESE	1.2E-02	1.1E-02	1.1E-02	1.2E-02	1.2E-02	1.3E-02
E	1.3E-02	1.2E-02	1.2E-02	1.3E-02	1.3E-02	1.4E-02
ENE	1.3E-02	1.2E-02	1.3E-02	1.4E-02	1.3E-02	1.4E-02
NE	8.0E-03	7.5E-03	7.7E-03	8.4E-03	8.2E-03	8.6E-03
NNE	5.6E-03	5.2E-03	5.4E-03	5.9E-03	5.8E-03	6.0E-03

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

	Distance (m)						
Direction	1265	1537	2001	1897	2573	2273	2298
N	7.2E-08	5.7E-08	4.0E-08	4.3E-08	2.8E-08	3.4E-08	3.3E-08
NNW	7.8E-08	6.1E-08	4.2E-08	4.6E-08	3.0E-08	3.6E-08	3.5E-08
NW	8.3E-08	6.6E-08	4.7E-08	5.0E-08	3.3E-08	3.9E-08	3.9E-08
WNW	1.4E-07	1.1E-07	8.0E-08	8.6E-08	5.7E-08	6.8E-08	6.7E-08
W	1.7E-07	1.3E-07	8.8E-08	9.6E-08	6.1E-08	7.3E-08	7.2E-08
WSW	1.0E-07	8.1E-08	5.6E-08	6.1E-08	3.9E-08	4.7E-08	4.6E-08
SW	6.5E-08	5.1E-08	3.6E-08	3.9E-08	2.6E-08	3.1E-08	3.0E-08
SSW	7.8E-08	6.2E-08	4.4E-08	4.8E-08	3.2E-08	3.8E-08	3.7E-08
S	8.4E-08	7.1E-08	5.9E-08	6.1E-08	5.1E-08	5.5E-08	5.4E-08
SSE	2.4E-07	2.0E-07	1.4E-07	1.5E-07	1.0E-07	1.2E-07	1.2E-07
SE	2.6E-07	2.1E-07	1.5E-07	1.7E-07	1.1E-07	1.3E-07	1.3E-07
ESE	2.5E-07	2.0E-07	1.4E-07	1.6E-07	1.0E-07	1.2E-07	1.2E-07
E	2.8E-07	2.2E-07	1.6E-07	1.7E-07	1.1E-07	1.3E-07	1.3E-07
ENE	2.9E-07	2.2E-07	1.6E-07	1.7E-07	1.1E-07	1.3E-07	1.3E-07
NE	1.8E-07	1.4E-07	9.6E-08	1.0E-07	6.7E-08	8.0E-08	7.9E-08
NNE	1.2E-07	9.6E-08	6.7E-08	7.3E-08	4.7E-08	5.6E-08	5.6E-08

	Distance (m)						
Direction	1631	1468	2305	2372	1699	2333	1596
N	5.3E-08	6.0E-08	3.3E-08	3.2E-08	5.0E-08	3.3E-08	5.4E-08
NNW	5.6E-08	6.4E-08	3.5E-08	3.3E-08	5.3E-08	3.4E-08	5.8E-08
NW	6.1E-08	7.0E-08	3.8E-08	3.7E-08	5.8E-08	3.8E-08	6.3E-08
WNW	1.0E-07	1.2E-07	6.6E-08	6.4E-08	9.9E-08	6.5E-08	1.1E-07
W	1.2E-07	1.4E-07	7.2E-08	6.9E-08	1.1E-07	7.1E-08	1.2E-07
WSW	7.5E-08	8.6E-08	4.6E-08	4.4E-08	7.1E-08	4.5E-08	7.7E-08
SW	4.8E-08	5.4E-08	3.0E-08	2.9E-08	4.5E-08	3.0E-08	4.9E-08
SSW	5.8E-08	6.6E-08	3.7E-08	3.5E-08	5.5E-08	3.6E-08	5.9E-08
S	6.8E-08	7.4E-08	5.4E-08	5.3E-08	6.6E-08	5.4E-08	6.9E-08
SSE	1.8E-07	2.1E-07	1.2E-07	1.2E-07	1.8E-07	1.2E-07	1.9E-07
SE	2.0E-07	2.2E-07	1.3E-07	1.2E-07	1.9E-07	1.3E-07	2.0E-07
ESE	1.9E-07	2.1E-07	1.2E-07	1.2E-07	1.8E-07	1.2E-07	1.9E-07
E	2.0E-07	2.3E-07	1.3E-07	1.2E-07	1.9E-07	1.3E-07	2.1E-07
ENE	2.1E-07	2.4E-07	1.3E-07	1.2E-07	2.0E-07	1.3E-07	2.1E-07
NE	1.3E-07	1.5E-07	7.9E-08	7.6E-08	1.2E-07	7.7E-08	1.3E-07
NNE	8.9E-08	1.0E-07	5.5E-08	5.3E-08	8.4E-08	5.4E-08	9.2E-08

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

	Distance (m)					
Direction	1913	2005	1958	1839	1870	1809
N	4.3E-08	4.0E-08	4.1E-08	4.5E-08	4.4E-08	4.6E-08
NNW	4.5E-08	4.2E-08	4.4E-08	4.8E-08	4.7E-08	4.9E-08
NW	4.9E-08	4.6E-08	4.8E-08	5.2E-08	5.1E-08	5.3E-08
WNW	8.5E-08	8.0E-08	8.3E-08	9.0E-08	8.8E-08	9.2E-08
W	9.4E-08	8.8E-08	9.1E-08	1.0E-07	9.8E-08	1.0E-07
WSW	6.0E-08	5.6E-08	5.8E-08	6.4E-08	6.2E-08	6.5E-08
SW	3.9E-08	3.6E-08	3.7E-08	4.1E-08	4.0E-08	4.2E-08
SSW	4.7E-08	4.4E-08	4.6E-08	5.0E-08	4.9E-08	5.1E-08
S	6.1E-08	5.9E-08	6.0E-08	6.2E-08	6.1E-08	6.3E-08
SSE	1.5E-07	1.4E-07	1.5E-07	1.6E-07	1.6E-07	1.6E-07
SE	1.6E-07	1.5E-07	1.6E-07	1.7E-07	1.7E-07	1.8E-07
ESE	1.5E-07	1.4E-07	1.5E-07	1.6E-07	1.6E-07	1.6E-07
E	1.7E-07	1.6E-07	1.6E-07	1.8E-07	1.7E-07	1.8E-07
ENE	1.7E-07	1.6E-07	1.6E-07	1.8E-07	1.7E-07	1.8E-07
NE	1.0E-07	9.6E-08	9.9E-08	1.1E-07	1.1E-07	1.1E-07
NNE	7.2E-08	6.7E-08	7.0E-08	7.6E-08	7.4E-08	7.8E-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
Jun 12, 1995 7:52 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

9.22E-05

At This Location: 956 Meters East Northeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Plant 9, 1 = GENERAL 2 = OFFGAS (Z002)

Dataset Name: 94-PLANT9-(I)-G1
Dataset Date: Jun 12, 1995 7:44 am
Wind File: WNDFILES\WIND94.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 956 Meters East Northeast
Lifetime Fatal Cancer Risk: 1.20E-09

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	1.91E-07
BREAST	2.16E-07
R MAR	8.51E-06
LUNGS	7.19E-04
THYROID	1.86E-07
ENDOST	1.14E-04
RMNDR	4.83E-06
EFFEC	9.22E-05

RADIONUCLIDE EMISSIONS DURING THE YEAR 1994

Nuclide	Class	Size	Source #1 Ci/y	Source #2 Ci/y	TOTAL Ci/y
U-234	Y	0.30	1.2E-07	9.8E-08	2.2E-07
U-235	Y	1.00	9.0E-09	6.9E-10	9.7E-09
U-236	Y	1.00	9.0E-09	6.9E-10	9.7E-09
U-238	Y	0.30	1.4E-07	3.7E-08	1.8E-07
TH-228	Y	0.30	1.1E-08	7.1E-10	1.2E-08
TH-230	Y	0.30	9.2E-09	9.0E-10	1.0E-08
TH-232	Y	0.30	4.4E-09	4.4E-10	4.8E-09

SITE INFORMATION

Temperature:	12 degrees C
Precipitation:	98 cm/y
Mixing Height:	950 m

SOURCE INFORMATION

Source Number:	1	2
Stack Height (m):	14.02	14.02
Diameter (m):	0.81	0.33
Plume Rise Momentum (m/s): (Exit Velocity)	1.64E+01	3.41E+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

1027	1033	1961	1728	1498	1372	1479	1529	1559	1676
1664	1620	1466	1442	1952	1391	989	956	1316	1311

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
Jun 12, 1995 7:52 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Plant 9, 1 = GENERAL 2 = OFFGAS (Z002)

Dataset Name: 94-PLANT9-(I)-G1
Dataset Date: Jun 12, 1995 7:44 am
Wind File: WNDFILES\WIND94.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	1.91E-07
BREAST	2.16E-07
R MAR	8.51E-06
LUNGS	7.19E-04
THYROID	1.86E-07
ENDOST	1.14E-04
RMNDR	4.83E-06
EFFEC	9.22E-05

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	3.46E-06
INHALATION	8.87E-05
AIR IMMERSION	6.80E-13
GROUND SURFACE	3.08E-08
INTERNAL	9.22E-05
EXTERNAL	3.08E-08
TOTAL	9.22E-05

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	5.12E-05
U-235	9.28E-07
U-236	9.21E-07
U-238	3.03E-05
TH-228	3.57E-06
TH-230	3.09E-06
TH-232	2.16E-06
TOTAL	9.22E-05

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	8.24E-12
BONE	5.59E-12
THYROID	4.04E-14
BREAST	4.55E-13
LUNG	1.17E-09
STOMACH	2.76E-13
BOWEL	3.90E-13
LIVER	4.10E-13
PANCREAS	1.83E-13
URINARY	1.03E-11
OTHER	2.24E-13
TOTAL	1.20E-09

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	1.80E-11
INHALATION	1.18E-09
AIR IMMERSION	1.58E-17
GROUND SURFACE	7.06E-13
INTERNAL	1.20E-09
EXTERNAL	7.06E-13
TOTAL	1.20E-09

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	6.67E-10
U-235	1.21E-11
U-236	1.17E-11
U-238	3.97E-10
TH-228	7.22E-11
TH-230	2.59E-11
TH-232	1.23E-11
TOTAL	1.20E-09

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

	Distance (m)						
Direction	1027	1033	1961	1728	1498	1372	1479
N	2.2E-05	2.1E-05	1.0E-05	1.2E-05	1.4E-05	1.6E-05	1.4E-05
NNW	2.4E-05	2.4E-05	1.1E-05	1.3E-05	1.5E-05	1.7E-05	1.6E-05
NW	2.3E-05	2.3E-05	1.2E-05	1.3E-05	1.6E-05	1.7E-05	1.6E-05
WNW	3.9E-05	3.9E-05	1.9E-05	2.2E-05	2.6E-05	2.9E-05	2.7E-05
W	5.7E-05	5.6E-05	2.5E-05	2.9E-05	3.5E-05	3.9E-05	3.6E-05
WSW	3.5E-05	3.4E-05	1.5E-05	1.8E-05	2.1E-05	2.4E-05	2.2E-05
SW	2.0E-05	2.0E-05	9.3E-06	1.1E-05	1.3E-05	1.4E-05	1.3E-05
SSW	2.3E-05	2.2E-05	1.1E-05	1.3E-05	1.5E-05	1.6E-05	1.5E-05
S	2.4E-05	2.4E-05	1.6E-05	1.7E-05	1.9E-05	2.0E-05	1.9E-05
SSE	5.9E-05	5.9E-05	3.1E-05	3.6E-05	4.1E-05	4.5E-05	4.1E-05
SE	6.7E-05	6.7E-05	3.4E-05	3.9E-05	4.6E-05	5.0E-05	4.6E-05
ESE	6.9E-05	6.8E-05	3.4E-05	3.9E-05	4.6E-05	5.0E-05	4.6E-05
E	7.7E-05	7.7E-05	3.8E-05	4.4E-05	5.2E-05	5.7E-05	5.2E-05
ENE	8.6E-05	8.5E-05	4.1E-05	4.7E-05	5.6E-05	6.2E-05	5.7E-05
NE	5.8E-05	5.8E-05	2.6E-05	3.0E-05	3.6E-05	4.1E-05	3.7E-05
NNE	3.8E-05	3.8E-05	1.8E-05	2.1E-05	2.5E-05	2.8E-05	2.5E-05

	Distance (m)						
Direction	1529	1559	1676	1664	1620	1466	1442
N	1.4E-05	1.4E-05	1.2E-05	1.3E-05	1.3E-05	1.4E-05	1.5E-05
NNW	1.5E-05	1.5E-05	1.4E-05	1.4E-05	1.4E-05	1.6E-05	1.6E-05
NW	1.5E-05	1.5E-05	1.4E-05	1.4E-05	1.4E-05	1.6E-05	1.6E-05
WNW	2.6E-05	2.5E-05	2.3E-05	2.3E-05	2.4E-05	2.7E-05	2.7E-05
W	3.4E-05	3.3E-05	3.0E-05	3.1E-05	3.2E-05	3.6E-05	3.7E-05
WSW	2.1E-05	2.0E-05	1.8E-05	1.9E-05	1.9E-05	2.2E-05	2.2E-05
SW	1.3E-05	1.2E-05	1.1E-05	1.1E-05	1.2E-05	1.3E-05	1.4E-05
SSW	1.4E-05	1.4E-05	1.3E-05	1.3E-05	1.4E-05	1.5E-05	1.5E-05
S	1.8E-05	1.8E-05	1.7E-05	1.7E-05	1.8E-05	1.9E-05	1.9E-05
SSE	4.0E-05	3.9E-05	3.7E-05	3.7E-05	3.8E-05	4.2E-05	4.3E-05
SE	4.5E-05	4.4E-05	4.1E-05	4.1E-05	4.2E-05	4.7E-05	4.7E-05
ESE	4.5E-05	4.4E-05	4.0E-05	4.1E-05	4.2E-05	4.7E-05	4.8E-05
E	5.0E-05	4.9E-05	4.6E-05	4.6E-05	4.7E-05	5.3E-05	5.4E-05
ENE	5.5E-05	5.3E-05	4.9E-05	5.0E-05	5.1E-05	5.7E-05	5.9E-05
NE	3.6E-05	3.5E-05	3.2E-05	3.2E-05	3.3E-05	3.7E-05	3.8E-05
NNE	2.4E-05	2.4E-05	2.2E-05	2.2E-05	2.3E-05	2.6E-05	2.6E-05

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

	Distance (m)					
Direction	1952	1391	989	956	1316	1311
N	1.0E-05	1.5E-05	2.2E-05	2.3E-05	1.6E-05	1.6E-05
NNW	1.1E-05	1.7E-05	2.5E-05	2.6E-05	1.8E-05	1.8E-05
NW	1.2E-05	1.7E-05	2.4E-05	2.5E-05	1.8E-05	1.8E-05
WNW	2.0E-05	2.8E-05	4.1E-05	4.2E-05	3.0E-05	3.0E-05
W	2.5E-05	3.9E-05	5.9E-05	6.2E-05	4.2E-05	4.2E-05
WSW	1.5E-05	2.4E-05	3.6E-05	3.8E-05	2.5E-05	2.5E-05
SW	9.4E-06	1.4E-05	2.1E-05	2.2E-05	1.5E-05	1.5E-05
SSW	1.1E-05	1.6E-05	2.3E-05	2.4E-05	1.7E-05	1.7E-05
S	1.6E-05	1.9E-05	2.4E-05	2.5E-05	2.0E-05	2.0E-05
SSE	3.1E-05	4.4E-05	6.1E-05	6.3E-05	4.7E-05	4.7E-05
SE	3.5E-05	4.9E-05	6.9E-05	7.2E-05	5.2E-05	5.2E-05
ESE	3.4E-05	5.0E-05	7.1E-05	7.4E-05	5.3E-05	5.3E-05
E	3.8E-05	5.6E-05	8.0E-05	8.3E-05	5.9E-05	6.0E-05
ENE	4.1E-05	6.1E-05	8.9E-05	9.2E-05	6.5E-05	6.5E-05
NE	2.6E-05	4.0E-05	6.1E-05	6.4E-05	4.3E-05	4.3E-05
NNE	1.8E-05	2.7E-05	4.0E-05	4.1E-05	2.9E-05	2.9E-05

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

Direction	Distance (m) 1027	1033	1961	1728	1498	1372	1479
N	2.8E-10	2.8E-10	1.3E-10	1.5E-10	1.8E-10	2.0E-10	1.8E-10
NNW	3.1E-10	3.1E-10	1.4E-10	1.7E-10	2.0E-10	2.2E-10	2.0E-10
NW	3.0E-10	3.0E-10	1.5E-10	1.7E-10	2.0E-10	2.2E-10	2.0E-10
WNW	5.1E-10	5.1E-10	2.5E-10	2.9E-10	3.4E-10	3.7E-10	3.4E-10
W	7.4E-10	7.3E-10	3.2E-10	3.8E-10	4.6E-10	5.1E-10	4.6E-10
WSW	4.5E-10	4.4E-10	1.9E-10	2.3E-10	2.7E-10	3.1E-10	2.8E-10
SW	2.6E-10	2.6E-10	1.2E-10	1.4E-10	1.6E-10	1.8E-10	1.7E-10
SSW	2.9E-10	2.9E-10	1.4E-10	1.6E-10	1.9E-10	2.1E-10	1.9E-10
S	3.0E-10	3.0E-10	2.0E-10	2.2E-10	2.4E-10	2.5E-10	2.4E-10
SSE	7.7E-10	7.6E-10	4.0E-10	4.6E-10	5.3E-10	5.8E-10	5.4E-10
SE	8.7E-10	8.6E-10	4.4E-10	5.1E-10	5.9E-10	6.5E-10	6.0E-10
ESE	8.9E-10	8.9E-10	4.4E-10	5.1E-10	5.9E-10	6.5E-10	6.0E-10
E	1.0E-09	1.0E-09	4.9E-10	5.7E-10	6.7E-10	7.4E-10	6.8E-10
ENE	1.1E-09	1.1E-09	5.3E-10	6.1E-10	7.3E-10	8.0E-10	7.4E-10
NE	7.6E-10	7.5E-10	3.3E-10	3.9E-10	4.7E-10	5.3E-10	4.8E-10
NNE	5.0E-10	4.9E-10	2.3E-10	2.7E-10	3.2E-10	3.6E-10	3.3E-10

Direction	Distance (m) 1529	1559	1676	1664	1620	1466	1442
N	1.8E-10	1.7E-10	1.6E-10	1.6E-10	1.6E-10	1.8E-10	1.9E-10
NNW	1.9E-10	1.9E-10	1.7E-10	1.7E-10	1.8E-10	2.0E-10	2.1E-10
NW	1.9E-10	1.9E-10	1.8E-10	1.8E-10	1.8E-10	2.0E-10	2.1E-10
WNW	3.3E-10	3.2E-10	3.0E-10	3.0E-10	3.1E-10	3.5E-10	3.5E-10
W	4.4E-10	4.3E-10	3.9E-10	4.0E-10	4.1E-10	4.7E-10	4.8E-10
WSW	2.7E-10	2.6E-10	2.4E-10	2.4E-10	2.5E-10	2.8E-10	2.9E-10
SW	1.6E-10	1.6E-10	1.4E-10	1.4E-10	1.5E-10	1.7E-10	1.7E-10
SSW	1.8E-10	1.8E-10	1.7E-10	1.7E-10	1.7E-10	1.9E-10	2.0E-10
S	2.3E-10	2.3E-10	2.2E-10	2.2E-10	2.3E-10	2.4E-10	2.4E-10
SSE	5.2E-10	5.1E-10	4.7E-10	4.8E-10	4.9E-10	5.4E-10	5.5E-10
SE	5.8E-10	5.7E-10	5.2E-10	5.3E-10	5.4E-10	6.0E-10	6.1E-10
ESE	5.8E-10	5.7E-10	5.2E-10	5.3E-10	5.4E-10	6.1E-10	6.2E-10
E	6.5E-10	6.4E-10	5.9E-10	5.9E-10	6.1E-10	6.8E-10	7.0E-10
ENE	7.1E-10	6.9E-10	6.4E-10	6.4E-10	6.6E-10	7.4E-10	7.6E-10
NE	4.6E-10	4.5E-10	4.1E-10	4.1E-10	4.3E-10	4.8E-10	5.0E-10
NNE	3.2E-10	3.1E-10	2.8E-10	2.9E-10	2.9E-10	3.3E-10	3.4E-10

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

	Distance (m)					
Direction	1952	1391	989	956	1316	1311
N	1.3E-10	2.0E-10	2.9E-10	3.0E-10	2.1E-10	2.1E-10
NNW	1.4E-10	2.2E-10	3.2E-10	3.3E-10	2.3E-10	2.3E-10
NW	1.5E-10	2.2E-10	3.1E-10	3.2E-10	2.3E-10	2.3E-10
WNW	2.5E-10	3.7E-10	5.3E-10	5.5E-10	3.9E-10	3.9E-10
W	3.2E-10	5.0E-10	7.7E-10	8.0E-10	5.4E-10	5.4E-10
WSW	1.9E-10	3.0E-10	4.7E-10	4.9E-10	3.3E-10	3.3E-10
SW	1.2E-10	1.8E-10	2.7E-10	2.9E-10	1.9E-10	1.9E-10
SSW	1.4E-10	2.1E-10	3.0E-10	3.1E-10	2.2E-10	2.2E-10
S	2.0E-10	2.5E-10	3.1E-10	3.1E-10	2.6E-10	2.6E-10
SSE	4.1E-10	5.7E-10	7.9E-10	8.2E-10	6.0E-10	6.0E-10
SE	4.5E-10	6.4E-10	9.0E-10	9.3E-10	6.7E-10	6.8E-10
ESE	4.4E-10	6.4E-10	9.3E-10	9.6E-10	6.8E-10	6.9E-10
E	5.0E-10	7.3E-10	1.0E-09	1.1E-09	7.7E-10	7.7E-10
ENE	5.3E-10	7.9E-10	1.2E-09	1.2E-09	8.4E-10	8.5E-10
NE	3.3E-10	5.2E-10	7.9E-10	8.3E-10	5.6E-10	5.6E-10
NNE	2.4E-10	3.5E-10	5.2E-10	5.4E-10	3.8E-10	3.8E-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
Jun 12, 1995 7:53 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

9.16E-05

At This Location: 961 Meters East Northeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Plant 9, 1 = GENERAL 2 = OFFGAS (Z002)

Dataset Name: 94-PLANT9-(I)-G2
Dataset Date: Jun 12, 1995 7:45 am
Wind File: WNDFILES\WIND94.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 961 Meters East Northeast
Lifetime Fatal Cancer Risk: 1.19E-09

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	1.85E-07
BREAST	2.10E-07
R MAR	8.33E-06
LUNGS	7.15E-04
THYROID	1.81E-07
ENDOST	1.11E-04
RMNDR	4.64E-06
EFFEC	9.16E-05

RADIONUCLIDE EMISSIONS DURING THE YEAR 1994

Nuclide	Class	Size	Source #1 Ci/y	Source #2 Ci/y	TOTAL Ci/y
U-234	Y	0.30	1.2E-07	9.8E-08	2.2E-07
U-235	Y	1.00	9.0E-09	6.9E-10	9.7E-09
U-236	Y	1.00	9.0E-09	6.9E-10	9.7E-09
U-238	Y	0.30	1.4E-07	3.7E-08	1.8E-07
TH-228	Y	0.30	1.1E-08	7.1E-10	1.2E-08
TH-230	Y	0.30	9.2E-09	9.0E-10	1.0E-08
TH-232	Y	0.30	4.4E-09	4.4E-10	4.8E-09

SITE INFORMATION

Temperature:	12 degrees C
Precipitation:	98 cm/y
Mixing Height:	950 m

SOURCE INFORMATION

Source Number:	1	2
Stack Height (m):	14.02	14.02
Diameter (m):	0.81	0.33
Plume Rise Momentum (m/s): (Exit Velocity)	1.64E+01	3.41E+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

961	1402	2294	1582	2187	2641	2247	1517	1435	1935
1996	1592	2701	1752	1963	2058	2020	2253	2284	1436

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
Jun 12, 1995 7:53 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Plant 9, 1 = GENERAL 2 = OFFGAS (Z002)

Dataset Name: 94-PLANT9-(I)-G2
Dataset Date: Jun 12, 1995 7:45 am
Wind File: WNDFILES\WIND94.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	1.85E-07
BREAST	2.10E-07
R MAR	8.33E-06
LUNGS	7.15E-04
THYROID	1.81E-07
ENDOST	1.11E-04
RMNDR	4.64E-06
EFFEC	9.16E-05

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	3.32E-06
INHALATION	8.82E-05
AIR IMMERSION	6.77E-13
GROUND SURFACE	3.06E-08
INTERNAL	9.15E-05
EXTERNAL	3.06E-08
TOTAL	9.16E-05

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	5.08E-05
U-235	9.21E-07
U-236	9.14E-07
U-238	3.01E-05
TH-228	3.56E-06
TH-230	3.08E-06
TH-232	2.15E-06
TOTAL	9.16E-05

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	8.05E-12
BONE	5.46E-12
THYROID	3.94E-14
BREAST	4.46E-13
LUNG	1.17E-09
STOMACH	2.69E-13
BOWEL	3.78E-13
LIVER	4.02E-13
PANCREAS	1.78E-13
URINARY	9.88E-12
OTHER	2.18E-13
TOTAL	1.19E-09

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	1.72E-11
INHALATION	1.17E-09
AIR IMMERSION	1.57E-17
GROUND SURFACE	7.02E-13
INTERNAL	1.19E-09
EXTERNAL	7.02E-13
TOTAL	1.19E-09

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	6.63E-10
U-235	1.20E-11
U-236	1.17E-11
U-238	3.95E-10
TH-228	7.19E-11
TH-230	2.58E-11
TH-232	1.22E-11
TOTAL	1.19E-09

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

Direction	Distance (m) 961	1402	2294	1582	2187	2641	2247
N	2.3E-05	1.5E-05	8.6E-06	1.3E-05	9.0E-06	7.2E-06	8.8E-06
NNW	2.6E-05	1.7E-05	9.1E-06	1.4E-05	9.7E-06	7.6E-06	9.3E-06
NW	2.5E-05	1.7E-05	9.5E-06	1.5E-05	1.0E-05	8.0E-06	9.7E-06
WNW	4.2E-05	2.8E-05	1.6E-05	2.5E-05	1.7E-05	1.4E-05	1.7E-05
W	6.1E-05	3.8E-05	2.0E-05	3.3E-05	2.1E-05	1.7E-05	2.1E-05
WSW	3.7E-05	2.3E-05	1.2E-05	2.0E-05	1.3E-05	1.0E-05	1.3E-05
SW	2.2E-05	1.4E-05	7.6E-06	1.2E-05	8.1E-06	6.4E-06	7.8E-06
SSW	2.4E-05	1.6E-05	9.0E-06	1.4E-05	9.5E-06	7.6E-06	9.2E-06
S	2.4E-05	1.9E-05	1.4E-05	1.8E-05	1.4E-05	1.2E-05	1.4E-05
SSE	6.3E-05	4.4E-05	2.7E-05	3.9E-05	2.8E-05	2.3E-05	2.7E-05
SE	7.1E-05	4.9E-05	2.9E-05	4.3E-05	3.1E-05	2.5E-05	3.0E-05
ESE	7.3E-05	4.9E-05	2.8E-05	4.3E-05	3.0E-05	2.4E-05	2.9E-05
E	8.2E-05	5.5E-05	3.2E-05	4.8E-05	3.3E-05	2.7E-05	3.2E-05
ENE	9.2E-05	6.0E-05	3.4E-05	5.2E-05	3.6E-05	2.8E-05	3.4E-05
NE	6.3E-05	4.0E-05	2.1E-05	3.4E-05	2.2E-05	1.7E-05	2.2E-05
NNE	4.1E-05	2.7E-05	1.5E-05	2.3E-05	1.6E-05	1.2E-05	1.5E-05

Direction	Distance (m) 1517	1435	1935	1996	1592	2701	1752
N	1.4E-05	1.5E-05	1.0E-05	1.0E-05	1.3E-05	7.0E-06	1.2E-05
NNW	1.5E-05	1.6E-05	1.1E-05	1.1E-05	1.4E-05	7.4E-06	1.3E-05
NW	1.5E-05	1.6E-05	1.2E-05	1.1E-05	1.4E-05	7.8E-06	1.3E-05
WNW	2.6E-05	2.7E-05	2.0E-05	1.9E-05	2.4E-05	1.3E-05	2.2E-05
W	3.5E-05	3.7E-05	2.5E-05	2.4E-05	3.2E-05	1.6E-05	2.9E-05
WSW	2.1E-05	2.2E-05	1.5E-05	1.5E-05	2.0E-05	9.9E-06	1.7E-05
SW	1.3E-05	1.3E-05	9.4E-06	9.0E-06	1.2E-05	6.2E-06	1.1E-05
SSW	1.4E-05	1.5E-05	1.1E-05	1.1E-05	1.4E-05	7.4E-06	1.2E-05
S	1.8E-05	1.9E-05	1.6E-05	1.5E-05	1.8E-05	1.2E-05	1.7E-05
SSE	4.0E-05	4.3E-05	3.2E-05	3.1E-05	3.8E-05	2.2E-05	3.5E-05
SE	4.5E-05	4.7E-05	3.5E-05	3.4E-05	4.3E-05	2.4E-05	3.9E-05
ESE	4.5E-05	4.8E-05	3.4E-05	3.3E-05	4.3E-05	2.3E-05	3.8E-05
E	5.1E-05	5.4E-05	3.9E-05	3.7E-05	4.8E-05	2.6E-05	4.3E-05
ENE	5.5E-05	5.9E-05	4.1E-05	4.0E-05	5.2E-05	2.7E-05	4.7E-05
NE	3.6E-05	3.8E-05	2.6E-05	2.5E-05	3.4E-05	1.7E-05	3.0E-05
NNE	2.5E-05	2.6E-05	1.8E-05	1.8E-05	2.3E-05	1.2E-05	2.1E-05

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

	Distance (m)					
Direction	1963	2058	2020	2253	2284	1436
N	1.0E-05	9.7E-06	9.9E-06	8.7E-06	8.6E-06	1.5E-05
NNW	1.1E-05	1.0E-05	1.1E-05	9.3E-06	9.2E-06	1.6E-05
NW	1.1E-05	1.1E-05	1.1E-05	9.7E-06	9.6E-06	1.6E-05
WNW	1.9E-05	1.8E-05	1.9E-05	1.7E-05	1.6E-05	2.7E-05
W	2.5E-05	2.3E-05	2.4E-05	2.1E-05	2.0E-05	3.7E-05
WSW	1.5E-05	1.4E-05	1.4E-05	1.2E-05	1.2E-05	2.2E-05
SW	9.2E-06	8.7E-06	8.9E-06	7.8E-06	7.7E-06	1.3E-05
SSW	1.1E-05	1.0E-05	1.0E-05	9.2E-06	9.0E-06	1.5E-05
S	1.5E-05	1.5E-05	1.5E-05	1.4E-05	1.4E-05	1.9E-05
SSE	3.1E-05	3.0E-05	3.0E-05	2.7E-05	2.7E-05	4.3E-05
SE	3.4E-05	3.3E-05	3.3E-05	3.0E-05	2.9E-05	4.7E-05
ESE	3.4E-05	3.2E-05	3.3E-05	2.9E-05	2.9E-05	4.8E-05
E	3.8E-05	3.6E-05	3.7E-05	3.2E-05	3.2E-05	5.4E-05
ENE	4.1E-05	3.8E-05	3.9E-05	3.4E-05	3.4E-05	5.9E-05
NE	2.6E-05	2.4E-05	2.5E-05	2.1E-05	2.1E-05	3.8E-05
NNE	1.8E-05	1.7E-05	1.7E-05	1.5E-05	1.5E-05	2.6E-05

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

	Distance (m)						
Direction	961	1402	2294	1582	2187	2641	2247
N	3.0E-10	1.9E-10	1.1E-10	1.7E-10	1.1E-10	9.1E-11	1.1E-10
NNW	3.3E-10	2.1E-10	1.2E-10	1.8E-10	1.2E-10	9.6E-11	1.2E-10
NW	3.2E-10	2.1E-10	1.2E-10	1.9E-10	1.3E-10	1.0E-10	1.2E-10
WNW	5.4E-10	3.6E-10	2.1E-10	3.2E-10	2.2E-10	1.8E-10	2.1E-10
W	8.0E-10	5.0E-10	2.6E-10	4.2E-10	2.8E-10	2.1E-10	2.7E-10
WSW	4.9E-10	3.0E-10	1.6E-10	2.5E-10	1.7E-10	1.3E-10	1.6E-10
SW	2.8E-10	1.8E-10	9.6E-11	1.5E-10	1.0E-10	8.1E-11	9.9E-11
SSW	3.1E-10	2.0E-10	1.1E-10	1.8E-10	1.2E-10	9.7E-11	1.2E-10
S	3.1E-10	2.5E-10	1.8E-10	2.3E-10	1.8E-10	1.6E-10	1.8E-10
SSE	8.1E-10	5.7E-10	3.4E-10	5.0E-10	3.6E-10	3.0E-10	3.5E-10
SE	9.2E-10	6.3E-10	3.8E-10	5.6E-10	4.0E-10	3.2E-10	3.8E-10
ESE	9.5E-10	6.4E-10	3.7E-10	5.6E-10	3.9E-10	3.1E-10	3.8E-10
E	1.1E-09	7.2E-10	4.1E-10	6.3E-10	4.3E-10	3.5E-10	4.2E-10
ENE	1.2E-09	7.8E-10	4.4E-10	6.8E-10	4.6E-10	3.6E-10	4.5E-10
NE	8.2E-10	5.1E-10	2.7E-10	4.4E-10	2.9E-10	2.2E-10	2.8E-10
NNE	5.3E-10	3.5E-10	1.9E-10	3.0E-10	2.0E-10	1.6E-10	2.0E-10

	Distance (m)						
Direction	1517	1435	1935	1996	1592	2701	1752
N	1.8E-10	1.9E-10	1.3E-10	1.3E-10	1.7E-10	8.9E-11	1.5E-10
NNW	1.9E-10	2.1E-10	1.4E-10	1.4E-10	1.8E-10	9.4E-11	1.6E-10
NW	2.0E-10	2.1E-10	1.5E-10	1.4E-10	1.9E-10	9.9E-11	1.7E-10
WNW	3.3E-10	3.5E-10	2.5E-10	2.4E-10	3.2E-10	1.7E-10	2.8E-10
W	4.5E-10	4.8E-10	3.2E-10	3.1E-10	4.2E-10	2.1E-10	3.7E-10
WSW	2.7E-10	2.9E-10	2.0E-10	1.9E-10	2.5E-10	1.3E-10	2.2E-10
SW	1.6E-10	1.7E-10	1.2E-10	1.1E-10	1.5E-10	7.8E-11	1.3E-10
SSW	1.9E-10	2.0E-10	1.4E-10	1.3E-10	1.8E-10	9.4E-11	1.6E-10
S	2.3E-10	2.4E-10	2.0E-10	2.0E-10	2.3E-10	1.5E-10	2.1E-10
SSE	5.2E-10	5.5E-10	4.1E-10	4.0E-10	5.0E-10	2.9E-10	4.5E-10
SE	5.8E-10	6.2E-10	4.5E-10	4.4E-10	5.5E-10	3.1E-10	5.0E-10
ESE	5.8E-10	6.2E-10	4.4E-10	4.3E-10	5.5E-10	3.0E-10	5.0E-10
E	6.6E-10	7.0E-10	5.0E-10	4.8E-10	6.2E-10	3.4E-10	5.6E-10
ENE	7.2E-10	7.6E-10	5.4E-10	5.2E-10	6.8E-10	3.5E-10	6.0E-10
NE	4.6E-10	5.0E-10	3.4E-10	3.2E-10	4.4E-10	2.2E-10	3.8E-10
NNE	3.2E-10	3.4E-10	2.4E-10	2.3E-10	3.0E-10	1.5E-10	2.7E-10

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

	Distance (m)					
Direction	1963	2058	2020	2253	2284	1436
N	1.3E-10	1.2E-10	1.3E-10	1.1E-10	1.1E-10	1.9E-10
NNW	1.4E-10	1.3E-10	1.4E-10	1.2E-10	1.2E-10	2.1E-10
NW	1.5E-10	1.4E-10	1.4E-10	1.2E-10	1.2E-10	2.1E-10
WNW	2.5E-10	2.4E-10	2.4E-10	2.1E-10	2.1E-10	3.5E-10
W	3.2E-10	3.0E-10	3.1E-10	2.6E-10	2.6E-10	4.8E-10
WSW	1.9E-10	1.8E-10	1.8E-10	1.6E-10	1.6E-10	2.9E-10
SW	1.2E-10	1.1E-10	1.1E-10	9.8E-11	9.7E-11	1.7E-10
SSW	1.4E-10	1.3E-10	1.3E-10	1.2E-10	1.1E-10	2.0E-10
S	2.0E-10	1.9E-10	1.9E-10	1.8E-10	1.8E-10	2.4E-10
SSE	4.0E-10	3.8E-10	3.9E-10	3.5E-10	3.5E-10	5.5E-10
SE	4.4E-10	4.2E-10	4.3E-10	3.8E-10	3.8E-10	6.1E-10
ESE	4.4E-10	4.1E-10	4.2E-10	3.7E-10	3.7E-10	6.2E-10
E	4.9E-10	4.7E-10	4.8E-10	4.2E-10	4.1E-10	7.0E-10
ENE	5.3E-10	5.0E-10	5.1E-10	4.5E-10	4.4E-10	7.6E-10
NE	3.3E-10	3.1E-10	3.2E-10	2.8E-10	2.7E-10	5.0E-10
NNE	2.3E-10	2.2E-10	2.2E-10	2.0E-10	1.9E-10	3.4E-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
Jun 5, 1995 10:41 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

3.58E-05

At This Location: 1017 Meters East Northeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Building 11, Laundry Exhaust (P274)

Dataset Name: 94-11LAUN-(I)-G1
Dataset Date: Jun 5, 1995 10:02 am
Wind File: WNDFILES\WIND94.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 1017 Meters East Northeast
Lifetime Fatal Cancer Risk: 4.69E-10

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	9.25E-08
BREAST	9.72E-08
R MAR	1.32E-05
LUNGS	2.42E-04
THYROID	9.15E-08
ENDOST	1.65E-04
RMNDR	8.55E-07
EFFEC	3.58E-05

RADIONUCLIDE EMISSIONS DURING THE YEAR 1994

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	0.30	1.9E-08	1.9E-08
U-235	Y	1.00	1.1E-09	1.1E-09
U-236	Y	1.00	1.1E-09	1.1E-09
U-238	Y	0.30	1.9E-08	1.9E-08
TH-228	Y	0.30	1.7E-08	1.7E-08
TH-230	Y	0.30	1.6E-08	1.6E-08
TH-232	Y	0.30	4.6E-09	4.6E-09

SITE INFORMATION

Temperature:	12 degrees C
Precipitation:	98 cm/y
Mixing Height:	950 m

SOURCE INFORMATION

Source Number:	1
Stack Height (m):	3.70
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

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

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
Jun 5, 1995 10:41 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Building 11, Laundry Exhaust (P274)

Dataset Name: 94-11LAUN-(I)-G1
Dataset Date: Jun 5, 1995 10:02 am
Wind File: WNDFILES\WIND94.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	9.25E-08
BREAST	9.72E-08
R MAR	1.32E-05
LUNGS	2.42E-04
THYROID	9.15E-08
ENDOST	1.65E-04
RMNDR	8.55E-07
EFFEC	3.58E-05

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	5.98E-07
INHALATION	3.52E-05
AIR IMMERSION	1.76E-13
GROUND SURFACE	5.75E-09
INTERNAL	3.58E-05
EXTERNAL	5.75E-09
TOTAL	3.58E-05

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	6.23E-06
U-235	1.97E-07
U-236	1.97E-07
U-238	5.54E-06
TH-228	1.03E-05
TH-230	9.42E-06
TH-232	3.94E-06
TOTAL	3.58E-05

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	1.16E-11
BONE	7.64E-12
THYROID	1.68E-14
BREAST	1.61E-13
LUNG	4.47E-10
STOMACH	1.25E-13
BOWEL	1.85E-13
LIVER	5.14E-13
PANCREAS	8.30E-14
URINARY	1.43E-12
OTHER	1.01E-13
TOTAL	4.69E-10

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	2.90E-12
INHALATION	4.66E-10
AIR IMMERSION	4.07E-18
GROUND SURFACE	1.32E-13
INTERNAL	4.69E-10
EXTERNAL	1.32E-13
TOTAL	4.69E-10

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	8.12E-11
U-235	2.58E-12
U-236	2.52E-12
U-238	7.28E-11
TH-228	2.08E-10
TH-230	7.90E-11
TH-232	2.24E-11
TOTAL	4.69E-10

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

	Distance (m)						
Direction	1337	1301	2043	1677	1375	1017	1061
N	6.2E-06	6.5E-06	3.4E-06	4.6E-06	6.0E-06	8.9E-06	8.4E-06
NNW	6.5E-06	6.7E-06	3.5E-06	4.7E-06	6.2E-06	9.3E-06	8.8E-06
NW	7.0E-06	7.2E-06	3.9E-06	5.1E-06	6.7E-06	9.7E-06	9.2E-06
WNW	1.2E-05	1.3E-05	6.8E-06	9.0E-06	1.2E-05	1.7E-05	1.6E-05
W	1.4E-05	1.5E-05	7.4E-06	1.0E-05	1.3E-05	2.1E-05	2.0E-05
WSW	8.6E-06	8.9E-06	4.7E-06	6.2E-06	8.2E-06	1.2E-05	1.2E-05
SW	5.4E-06	5.6E-06	3.0E-06	4.0E-06	5.2E-06	7.6E-06	7.2E-06
SSW	6.6E-06	6.8E-06	3.7E-06	4.9E-06	6.4E-06	9.1E-06	8.7E-06
S	8.6E-06	8.8E-06	6.0E-06	6.9E-06	8.3E-06	1.2E-05	1.1E-05
SSE	2.1E-05	2.2E-05	1.2E-05	1.6E-05	2.0E-05	2.8E-05	2.7E-05
SE	2.3E-05	2.3E-05	1.3E-05	1.7E-05	2.2E-05	3.0E-05	2.9E-05
ESE	2.2E-05	2.2E-05	1.2E-05	1.6E-05	2.1E-05	3.0E-05	2.8E-05
E	2.4E-05	2.5E-05	1.3E-05	1.8E-05	2.3E-05	3.3E-05	3.2E-05
ENE	2.5E-05	2.6E-05	1.3E-05	1.8E-05	2.4E-05	3.6E-05	3.4E-05
NE	1.5E-05	1.6E-05	8.0E-06	1.1E-05	1.4E-05	2.2E-05	2.0E-05
NNE	1.1E-05	1.1E-05	5.8E-06	7.8E-06	1.0E-05	1.6E-05	1.5E-05

	Distance (m)						
Direction	1106	1137	1261	1252	1238	1137	1132
N	8.0E-06	7.7E-06	6.7E-06	6.8E-06	6.9E-06	7.7E-06	7.7E-06
NNW	8.3E-06	8.0E-06	7.0E-06	7.1E-06	7.2E-06	8.0E-06	8.1E-06
NW	8.8E-06	8.5E-06	7.5E-06	7.6E-06	7.7E-06	8.5E-06	8.5E-06
WNW	1.5E-05	1.5E-05	1.3E-05	1.3E-05	1.3E-05	1.5E-05	1.5E-05
W	1.9E-05	1.8E-05	1.5E-05	1.5E-05	1.6E-05	1.8E-05	1.8E-05
WSW	1.1E-05	1.1E-05	9.3E-06	9.4E-06	9.5E-06	1.1E-05	1.1E-05
SW	6.9E-06	6.6E-06	5.8E-06	5.9E-06	6.0E-06	6.6E-06	6.7E-06
SSW	8.3E-06	8.0E-06	7.1E-06	7.1E-06	7.2E-06	8.0E-06	8.0E-06
S	1.1E-05	1.0E-05	9.1E-06	9.2E-06	9.3E-06	1.0E-05	1.0E-05
SSE	2.6E-05	2.5E-05	2.2E-05	2.3E-05	2.3E-05	2.5E-05	2.5E-05
SE	2.8E-05	2.7E-05	2.4E-05	2.4E-05	2.5E-05	2.7E-05	2.7E-05
ESE	2.7E-05	2.6E-05	2.3E-05	2.3E-05	2.4E-05	2.6E-05	2.6E-05
E	3.0E-05	2.9E-05	2.6E-05	2.6E-05	2.6E-05	2.9E-05	2.9E-05
ENE	3.2E-05	3.1E-05	2.7E-05	2.7E-05	2.8E-05	3.1E-05	3.1E-05
NE	1.9E-05	1.9E-05	1.6E-05	1.6E-05	1.7E-05	1.9E-05	1.9E-05
NNE	1.4E-05	1.4E-05	1.2E-05	1.2E-05	1.2E-05	1.4E-05	1.4E-05

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

	Distance (m)					
Direction	1735	1264	1094	1095	1724	1729
N	4.3E-06	6.7E-06	8.1E-06	8.1E-06	4.4E-06	4.4E-06
NNW	4.5E-06	7.0E-06	8.4E-06	8.4E-06	4.5E-06	4.5E-06
NW	4.9E-06	7.5E-06	8.9E-06	8.9E-06	5.0E-06	4.9E-06
WNW	8.6E-06	1.3E-05	1.6E-05	1.6E-05	8.7E-06	8.6E-06
W	9.5E-06	1.5E-05	1.9E-05	1.9E-05	9.6E-06	9.6E-06
WSW	5.9E-06	9.2E-06	1.1E-05	1.1E-05	6.0E-06	6.0E-06
SW	3.8E-06	5.8E-06	7.0E-06	7.0E-06	3.9E-06	3.8E-06
SSW	4.7E-06	7.1E-06	8.4E-06	8.4E-06	4.7E-06	4.7E-06
S	6.7E-06	9.1E-06	1.1E-05	1.1E-05	6.7E-06	6.7E-06
SSE	1.5E-05	2.2E-05	2.6E-05	2.6E-05	1.6E-05	1.5E-05
SE	1.6E-05	2.4E-05	2.8E-05	2.8E-05	1.7E-05	1.7E-05
ESE	1.5E-05	2.3E-05	2.7E-05	2.7E-05	1.6E-05	1.6E-05
E	1.7E-05	2.6E-05	3.1E-05	3.1E-05	1.7E-05	1.7E-05
ENE	1.7E-05	2.7E-05	3.3E-05	3.3E-05	1.7E-05	1.7E-05
NE	1.0E-05	1.6E-05	2.0E-05	2.0E-05	1.0E-05	1.0E-05
NNE	7.4E-06	1.2E-05	1.4E-05	1.4E-05	7.5E-06	7.4E-06

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

	Distance (m)						
Direction	1337	1301	2043	1677	1375	1017	1061
N	8.1E-11	8.4E-11	4.4E-11	5.9E-11	7.8E-11	1.2E-10	1.1E-10
NNW	8.4E-11	8.7E-11	4.6E-11	6.1E-11	8.1E-11	1.2E-10	1.1E-10
NW	9.0E-11	9.4E-11	5.0E-11	6.7E-11	8.7E-11	1.3E-10	1.2E-10
WNW	1.6E-10	1.6E-10	8.9E-11	1.2E-10	1.5E-10	2.2E-10	2.1E-10
W	1.8E-10	1.9E-10	9.6E-11	1.3E-10	1.8E-10	2.7E-10	2.6E-10
WSW	1.1E-10	1.2E-10	6.0E-11	8.1E-11	1.1E-10	1.6E-10	1.5E-10
SW	7.0E-11	7.3E-11	3.9E-11	5.2E-11	6.8E-11	9.9E-11	9.4E-11
SSW	8.6E-11	8.9E-11	4.8E-11	6.4E-11	8.3E-11	1.2E-10	1.1E-10
S	1.1E-10	1.1E-10	7.7E-11	9.0E-11	1.1E-10	1.5E-10	1.5E-10
SSE	2.8E-10	2.8E-10	1.6E-10	2.1E-10	2.7E-10	3.6E-10	3.5E-10
SE	3.0E-10	3.1E-10	1.7E-10	2.2E-10	2.9E-10	4.0E-10	3.8E-10
ESE	2.8E-10	2.9E-10	1.6E-10	2.1E-10	2.7E-10	3.9E-10	3.7E-10
E	3.1E-10	3.2E-10	1.7E-10	2.3E-10	3.0E-10	4.4E-10	4.2E-10
ENE	3.3E-10	3.4E-10	1.7E-10	2.4E-10	3.1E-10	4.7E-10	4.4E-10
NE	1.9E-10	2.0E-10	1.0E-10	1.4E-10	1.9E-10	2.8E-10	2.7E-10
NNE	1.4E-10	1.5E-10	7.5E-11	1.0E-10	1.4E-10	2.1E-10	2.0E-10

	Distance (m)						
Direction	1106	1137	1261	1252	1238	1137	1132
N	1.0E-10	1.0E-10	8.8E-11	8.8E-11	9.0E-11	1.0E-10	1.0E-10
NNW	1.1E-10	1.0E-10	9.1E-11	9.2E-11	9.3E-11	1.0E-10	1.1E-10
NW	1.1E-10	1.1E-10	9.7E-11	9.8E-11	1.0E-10	1.1E-10	1.1E-10
WNW	2.0E-10	1.9E-10	1.7E-10	1.7E-10	1.7E-10	1.9E-10	1.9E-10
W	2.4E-10	2.3E-10	2.0E-10	2.0E-10	2.1E-10	2.3E-10	2.3E-10
WSW	1.4E-10	1.4E-10	1.2E-10	1.2E-10	1.2E-10	1.4E-10	1.4E-10
SW	8.9E-11	8.6E-11	7.6E-11	7.6E-11	7.8E-11	8.6E-11	8.7E-11
SSW	1.1E-10	1.0E-10	9.2E-11	9.3E-11	9.4E-11	1.0E-10	1.0E-10
S	1.4E-10	1.3E-10	1.2E-10	1.2E-10	1.2E-10	1.3E-10	1.4E-10
SSE	3.4E-10	3.3E-10	2.9E-10	3.0E-10	3.0E-10	3.3E-10	3.3E-10
SE	3.6E-10	3.5E-10	3.2E-10	3.2E-10	3.2E-10	3.5E-10	3.6E-10
ESE	3.5E-10	3.4E-10	3.0E-10	3.1E-10	3.1E-10	3.4E-10	3.4E-10
E	4.0E-10	3.8E-10	3.4E-10	3.4E-10	3.5E-10	3.8E-10	3.9E-10
ENE	4.2E-10	4.1E-10	3.5E-10	3.6E-10	3.6E-10	4.1E-10	4.1E-10
NE	2.5E-10	2.4E-10	2.1E-10	2.1E-10	2.2E-10	2.4E-10	2.5E-10
NNE	1.9E-10	1.8E-10	1.5E-10	1.6E-10	1.6E-10	1.8E-10	1.8E-10

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

	Distance (m)					
Direction	1735	1264	1094	1095	1724	1729
N	5.6E-11	8.7E-11	1.1E-10	1.1E-10	5.7E-11	5.6E-11
NNW	5.8E-11	9.1E-11	1.1E-10	1.1E-10	5.9E-11	5.8E-11
NW	6.4E-11	9.7E-11	1.2E-10	1.2E-10	6.4E-11	6.4E-11
WNW	1.1E-10	1.7E-10	2.0E-10	2.0E-10	1.1E-10	1.1E-10
W	1.2E-10	2.0E-10	2.5E-10	2.5E-10	1.2E-10	1.2E-10
WSW	7.7E-11	1.2E-10	1.5E-10	1.5E-10	7.8E-11	7.7E-11
SW	4.9E-11	7.6E-11	9.1E-11	9.0E-11	5.0E-11	5.0E-11
SSW	6.1E-11	9.2E-11	1.1E-10	1.1E-10	6.1E-11	6.1E-11
S	8.7E-11	1.2E-10	1.4E-10	1.4E-10	8.8E-11	8.7E-11
SSE	2.0E-10	2.9E-10	3.4E-10	3.4E-10	2.0E-10	2.0E-10
SE	2.2E-10	3.2E-10	3.7E-10	3.7E-10	2.2E-10	2.2E-10
ESE	2.0E-10	3.0E-10	3.6E-10	3.6E-10	2.0E-10	2.0E-10
E	2.2E-10	3.4E-10	4.0E-10	4.0E-10	2.2E-10	2.2E-10
ENE	2.2E-10	3.5E-10	4.3E-10	4.3E-10	2.3E-10	2.3E-10
NE	1.3E-10	2.1E-10	2.6E-10	2.6E-10	1.3E-10	1.3E-10
NNE	9.6E-11	1.5E-10	1.9E-10	1.9E-10	9.7E-11	9.7E-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
Jun 5, 1995 10:41 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

2.51E-05

At This Location: 1330 Meters East Northeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Building 11, Laundry Exhaust (P274)

Dataset Name: 94-11LAUN-(I)-G2
Dataset Date: Jun 5, 1995 10:04 am
Wind File: WNDFILES\WIND94.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 1330 Meters East Northeast
Lifetime Fatal Cancer Risk: 3.28E-10

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	6.47E-08
BREAST	6.80E-08
R MAR	9.24E-06
LUNGS	1.69E-04
THYROID	6.40E-08
ENDOST	1.15E-04
RMNDR	5.93E-07
EFFEC	2.51E-05

RADIONUCLIDE EMISSIONS DURING THE YEAR 1994

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	0.30	1.9E-08	1.9E-08
U-235	Y	1.00	1.1E-09	1.1E-09
U-236	Y	1.00	1.1E-09	1.1E-09
U-238	Y	0.30	1.9E-08	1.9E-08
TH-228	Y	0.30	1.7E-08	1.7E-08
TH-230	Y	0.30	1.6E-08	1.6E-08
TH-232	Y	0.30	4.6E-09	4.6E-09

SITE INFORMATION

Temperature:	12 degrees C
Precipitation:	98 cm/y
Mixing Height:	950 m

SOURCE INFORMATION

Source Number:	1
Stack Height (m):	3.70
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

1330	1639	2098	1821	2526	2342	2181	1736	1351	2250
2319	1805	2402	1712	2031	2123	2076	1857	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
Jun 5, 1995 10:41 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45239-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Building 11, Laundry Exhaust (P274)

Dataset Name: 94-11LAUN-(I)-G2
Dataset Date: Jun 5, 1995 10:04 am
Wind File: WNDFILES\WIND94.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	6.47E-08
BREAST	6.80E-08
R MAR	9.24E-06
LUNGS	1.69E-04
THYROID	6.40E-08
ENDOST	1.15E-04
RMNDR	5.93E-07
EFFEC	2.51E-05

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	4.14E-07
INHALATION	2.46E-05
AIR IMMERSION	1.23E-13
GROUND SURFACE	4.08E-09
INTERNAL	2.51E-05
EXTERNAL	4.08E-09
TOTAL	2.51E-05

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	4.36E-06
U-235	1.38E-07
U-236	1.37E-07
U-238	3.88E-06
TH-228	7.21E-06
TH-230	6.60E-06
TH-232	2.76E-06
TOTAL	2.51E-05

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	8.09E-12
BONE	5.34E-12
THYROID	1.18E-14
BREAST	1.13E-13
LUNG	3.13E-10
STOMACH	8.74E-14
BOWEL	1.29E-13
LIVER	3.59E-13
PANCREAS	5.80E-14
URINARY	9.93E-13
OTHER	7.09E-14
TOTAL	3.28E-10

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	2.01E-12
INHALATION	3.26E-10
AIR IMMERSION	2.85E-18
GROUND SURFACE	9.35E-14
INTERNAL	3.28E-10
EXTERNAL	9.35E-14
TOTAL	3.28E-10

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	5.68E-11
U-235	1.81E-12
U-236	1.76E-12
U-238	5.10E-11
TH-228	1.46E-10
TH-230	5.53E-11
TH-232	1.57E-11
TOTAL	3.28E-10

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

	Distance (m)						
Direction	1330	1639	2098	1821	2526	2342	2181
N	6.2E-06	4.7E-06	3.3E-06	4.0E-06	2.5E-06	2.8E-06	3.1E-06
NNW	6.5E-06	4.8E-06	3.4E-06	4.2E-06	2.5E-06	2.9E-06	3.2E-06
NW	7.0E-06	5.3E-06	3.7E-06	4.6E-06	2.8E-06	3.2E-06	3.5E-06
WNW	1.2E-05	9.3E-06	6.5E-06	8.0E-06	4.9E-06	5.5E-06	6.2E-06
W	1.4E-05	1.0E-05	7.0E-06	8.8E-06	5.2E-06	5.9E-06	6.6E-06
WSW	8.6E-06	6.4E-06	4.5E-06	5.5E-06	3.4E-06	3.8E-06	4.2E-06
SW	5.4E-06	4.1E-06	2.9E-06	3.5E-06	2.2E-06	2.5E-06	2.7E-06
SSW	6.6E-06	5.0E-06	3.6E-06	4.4E-06	2.7E-06	3.0E-06	3.4E-06
S	8.6E-06	7.0E-06	5.8E-06	6.4E-06	5.2E-06	5.4E-06	5.7E-06
SSE	2.1E-05	1.6E-05	1.2E-05	1.4E-05	9.1E-06	1.0E-05	1.1E-05
SE	2.3E-05	1.8E-05	1.3E-05	1.5E-05	9.7E-06	1.1E-05	1.2E-05
ESE	2.2E-05	1.7E-05	1.2E-05	1.4E-05	9.0E-06	1.0E-05	1.1E-05
E	2.4E-05	1.8E-05	1.3E-05	1.6E-05	9.7E-06	1.1E-05	1.2E-05
ENE	2.5E-05	1.9E-05	1.3E-05	1.6E-05	9.6E-06	1.1E-05	1.2E-05
NE	1.5E-05	1.1E-05	7.7E-06	9.5E-06	5.8E-06	6.5E-06	7.2E-06
NNE	1.1E-05	8.0E-06	5.5E-06	6.8E-06	4.1E-06	4.6E-06	5.2E-06

	Distance (m)						
Direction	1736	1351	2250	2319	1805	2402	1712
N	4.3E-06	6.1E-06	2.9E-06	2.8E-06	4.1E-06	2.7E-06	4.4E-06
NNW	4.5E-06	6.4E-06	3.0E-06	2.9E-06	4.2E-06	2.7E-06	4.5E-06
NW	4.9E-06	6.8E-06	3.4E-06	3.2E-06	4.6E-06	3.0E-06	5.0E-06
WNW	8.6E-06	1.2E-05	5.9E-06	5.6E-06	8.1E-06	5.3E-06	8.7E-06
W	9.5E-06	1.4E-05	6.3E-06	6.0E-06	8.9E-06	5.7E-06	9.7E-06
WSW	5.9E-06	8.4E-06	4.0E-06	3.8E-06	5.6E-06	3.6E-06	6.0E-06
SW	3.8E-06	5.3E-06	2.6E-06	2.5E-06	3.6E-06	2.4E-06	3.9E-06
SSW	4.7E-06	6.5E-06	3.2E-06	3.1E-06	4.4E-06	2.9E-06	4.7E-06
S	6.7E-06	8.4E-06	5.6E-06	5.5E-06	6.5E-06	5.3E-06	6.7E-06
SSE	1.5E-05	2.1E-05	1.1E-05	1.0E-05	1.5E-05	9.8E-06	1.6E-05
SE	1.6E-05	2.2E-05	1.2E-05	1.1E-05	1.6E-05	1.0E-05	1.7E-05
ESE	1.5E-05	2.1E-05	1.1E-05	1.0E-05	1.5E-05	9.7E-06	1.6E-05
E	1.7E-05	2.4E-05	1.2E-05	1.1E-05	1.6E-05	1.0E-05	1.7E-05
ENE	1.7E-05	2.5E-05	1.2E-05	1.1E-05	1.6E-05	1.0E-05	1.7E-05
NE	1.0E-05	1.5E-05	6.9E-06	6.6E-06	9.6E-06	6.2E-06	1.0E-05
NNE	7.4E-06	1.1E-05	4.9E-06	4.7E-06	6.9E-06	4.4E-06	7.5E-06

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

	Distance (m)					
Direction	2031	2123	2076	1857	1890	1850
N	3.4E-06	3.2E-06	3.3E-06	3.9E-06	3.8E-06	3.9E-06
NNW	3.5E-06	3.3E-06	3.4E-06	4.0E-06	3.9E-06	4.1E-06
NW	3.9E-06	3.6E-06	3.8E-06	4.4E-06	4.3E-06	4.5E-06
WNW	6.8E-06	6.4E-06	6.6E-06	7.8E-06	7.6E-06	7.8E-06
W	7.4E-06	6.9E-06	7.2E-06	8.5E-06	8.3E-06	8.6E-06
WSW	4.7E-06	4.4E-06	4.5E-06	5.3E-06	5.2E-06	5.4E-06
SW	3.0E-06	2.8E-06	2.9E-06	3.4E-06	3.4E-06	3.5E-06
SSW	3.7E-06	3.5E-06	3.6E-06	4.2E-06	4.1E-06	4.3E-06
S	6.0E-06	5.8E-06	5.9E-06	6.3E-06	6.3E-06	6.4E-06
SSE	1.2E-05	1.2E-05	1.2E-05	1.4E-05	1.4E-05	1.4E-05
SE	1.3E-05	1.2E-05	1.3E-05	1.5E-05	1.5E-05	1.5E-05
ESE	1.2E-05	1.2E-05	1.2E-05	1.4E-05	1.4E-05	1.4E-05
E	1.3E-05	1.3E-05	1.3E-05	1.5E-05	1.5E-05	1.5E-05
ENE	1.3E-05	1.3E-05	1.3E-05	1.5E-05	1.5E-05	1.6E-05
NE	8.1E-06	7.5E-06	7.8E-06	9.2E-06	9.0E-06	9.3E-06
NNE	5.8E-06	5.4E-06	5.6E-06	6.6E-06	6.5E-06	6.7E-06

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

	Distance (m)						
Direction	1330	1639	2098	1821	2526	2342	2181
N	8.1E-11	6.1E-11	4.2E-11	5.2E-11	3.2E-11	3.6E-11	4.0E-11
NNW	8.5E-11	6.3E-11	4.4E-11	5.4E-11	3.3E-11	3.7E-11	4.1E-11
NW	9.1E-11	6.9E-11	4.8E-11	5.9E-11	3.6E-11	4.1E-11	4.5E-11
WNW	1.6E-10	1.2E-10	8.5E-11	1.0E-10	6.4E-11	7.2E-11	8.0E-11
W	1.8E-10	1.3E-10	9.2E-11	1.1E-10	6.8E-11	7.7E-11	8.6E-11
WSW	1.1E-10	8.3E-11	5.8E-11	7.2E-11	4.4E-11	4.9E-11	5.5E-11
SW	7.1E-11	5.3E-11	3.7E-11	4.6E-11	2.8E-11	3.2E-11	3.5E-11
SSW	8.6E-11	6.6E-11	4.6E-11	5.7E-11	3.5E-11	3.9E-11	4.4E-11
S	1.1E-10	9.1E-11	7.6E-11	8.4E-11	6.7E-11	7.1E-11	7.4E-11
SSE	2.8E-10	2.2E-10	1.6E-10	1.9E-10	1.2E-10	1.3E-10	1.5E-10
SE	3.0E-10	2.3E-10	1.7E-10	2.0E-10	1.3E-10	1.4E-10	1.6E-10
ESE	2.8E-10	2.2E-10	1.5E-10	1.9E-10	1.2E-10	1.3E-10	1.5E-10
E	3.1E-10	2.4E-10	1.7E-10	2.1E-10	1.3E-10	1.4E-10	1.6E-10
ENE	3.3E-10	2.4E-10	1.7E-10	2.1E-10	1.3E-10	1.4E-10	1.6E-10
NE	2.0E-10	1.5E-10	1.0E-10	1.2E-10	7.5E-11	8.5E-11	9.4E-11
NNE	1.4E-10	1.0E-10	7.1E-11	8.9E-11	5.3E-11	6.0E-11	6.7E-11

	Distance (m)						
Direction	1736	1351	2250	2319	1805	2402	1712
N	5.6E-11	8.0E-11	3.8E-11	3.6E-11	5.3E-11	3.4E-11	5.7E-11
NNW	5.8E-11	8.3E-11	3.9E-11	3.7E-11	5.5E-11	3.5E-11	5.9E-11
NW	6.3E-11	8.9E-11	4.3E-11	4.2E-11	6.0E-11	3.9E-11	6.5E-11
WNW	1.1E-10	1.6E-10	7.7E-11	7.3E-11	1.1E-10	7.0E-11	1.1E-10
W	1.2E-10	1.8E-10	8.2E-11	7.8E-11	1.2E-10	7.4E-11	1.3E-10
WSW	7.7E-11	1.1E-10	5.2E-11	5.0E-11	7.2E-11	4.7E-11	7.8E-11
SW	4.9E-11	6.9E-11	3.4E-11	3.2E-11	4.7E-11	3.1E-11	5.0E-11
SSW	6.1E-11	8.4E-11	4.2E-11	4.0E-11	5.7E-11	3.8E-11	6.2E-11
S	8.7E-11	1.1E-10	7.2E-11	7.1E-11	8.4E-11	6.9E-11	8.8E-11
SSE	2.0E-10	2.7E-10	1.4E-10	1.3E-10	1.9E-10	1.3E-10	2.0E-10
SE	2.1E-10	2.9E-10	1.5E-10	1.4E-10	2.0E-10	1.4E-10	2.2E-10
ESE	2.0E-10	2.8E-10	1.4E-10	1.3E-10	1.9E-10	1.3E-10	2.1E-10
E	2.2E-10	3.1E-10	1.5E-10	1.4E-10	2.1E-10	1.4E-10	2.2E-10
ENE	2.2E-10	3.2E-10	1.5E-10	1.4E-10	2.1E-10	1.4E-10	2.3E-10
NE	1.3E-10	1.9E-10	9.0E-11	8.6E-11	1.3E-10	8.1E-11	1.4E-10
NNE	9.6E-11	1.4E-10	6.4E-11	6.1E-11	9.0E-11	5.8E-11	9.8E-11

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

	Distance (m)					
Direction	2031	2123	2076	1857	1890	1850
N	4.4E-11	4.1E-11	4.3E-11	5.1E-11	4.9E-11	5.1E-11
NNW	4.6E-11	4.3E-11	4.4E-11	5.2E-11	5.1E-11	5.3E-11
NW	5.0E-11	4.7E-11	4.9E-11	5.8E-11	5.6E-11	5.8E-11
WNW	8.9E-11	8.4E-11	8.6E-11	1.0E-10	9.9E-11	1.0E-10
W	9.6E-11	9.0E-11	9.3E-11	1.1E-10	1.1E-10	1.1E-10
WSW	6.1E-11	5.7E-11	5.9E-11	6.9E-11	6.8E-11	7.0E-11
SW	3.9E-11	3.7E-11	3.8E-11	4.5E-11	4.4E-11	4.5E-11
SSW	4.9E-11	4.6E-11	4.7E-11	5.5E-11	5.4E-11	5.5E-11
S	7.7E-11	7.5E-11	7.6E-11	8.3E-11	8.2E-11	8.3E-11
SSE	1.6E-10	1.5E-10	1.6E-10	1.8E-10	1.8E-10	1.8E-10
SE	1.7E-10	1.6E-10	1.7E-10	2.0E-10	1.9E-10	2.0E-10
ESE	1.6E-10	1.5E-10	1.6E-10	1.8E-10	1.8E-10	1.8E-10
E	1.7E-10	1.6E-10	1.7E-10	2.0E-10	1.9E-10	2.0E-10
ENE	1.8E-10	1.6E-10	1.7E-10	2.0E-10	2.0E-10	2.0E-10
NE	1.1E-10	9.8E-11	1.0E-10	1.2E-10	1.2E-10	1.2E-10
NNE	7.5E-11	7.0E-11	7.3E-11	8.6E-11	8.4E-11	8.7E-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
May 3, 1995 3:11 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent (mrem/year)
2.19E-03

At This Location: 1017 Meters East Northeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Building 11, Respirator Washing Facility

Dataset Name: 94-RWF-(I)-G1
Dataset Date: May 3, 1995 3:09 pm
Wind File: WNDFILES\WIND94.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 1017 Meters East Northeast
Lifetime Fatal Cancer Risk: 2.79E-08

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	6.81E-06
BREAST	7.71E-06
R MAR	3.01E-04
LUNGS	1.65E-02
THYROID	6.63E-06
ENDOST	3.99E-03
RMNDR	1.77E-04
EFFEC	2.19E-03

RADIONUCLIDE EMISSIONS DURING THE YEAR 1994

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	1.00	4.8E-06	4.8E-06
U-235	Y	1.00	2.5E-07	2.5E-07
U-236	Y	1.00	1.9E-07	1.9E-07
U-238	Y	1.00	5.4E-06	5.4E-06
RA-226	W	1.00	3.4E-09	3.4E-09
RA-228	W	1.00	1.4E-08	1.4E-08
TH-228	Y	1.00	1.4E-07	1.4E-07
TH-230	Y	1.00	4.2E-07	4.2E-07
TH-232	Y	1.00	2.3E-08	2.3E-08
TH-234	Y	1.00	2.1E-05	2.1E-05

SITE INFORMATION

Temperature: 12 degrees C
Precipitation: 98 cm/y
Mixing Height: 950 m

SOURCE INFORMATION

Source Number:	1
Stack Height (m):	3.05
Diameter (m):	0.20
Plume Rise Momentum (m/s): (Exit Velocity)	3.64E+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

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 3, 1995 3:11 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Building 11, Respirator Washing Facility

Dataset Name: 94-RWF-(I)-G1
Dataset Date: May 3, 1995 3:09 pm
Wind File: WNDFILES\WIND94.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	6.81E-06
BREAST	7.71E-06
R MAR	3.01E-04
LUNGS	1.65E-02
THYROID	6.63E-06
ENDOST	3.99E-03
RMNDR	1.77E-04
EFFEC	2.19E-03

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	1.27E-04
INHALATION	2.07E-03
AIR IMMERSION	1.73E-10
GROUND SURFACE	1.31E-06
INTERNAL	2.19E-03
EXTERNAL	1.31E-06
TOTAL	2.19E-03

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	9.49E-04
U-235	4.77E-05
U-236	3.49E-05
U-238	9.45E-04
RA-226	9.29E-08
RA-228	1.50E-07
TH-228	5.18E-05
TH-230	1.52E-04
TH-232	1.16E-05
TH-234	2.51E-06
TOTAL	2.19E-03

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	2.96E-10
BONE	1.96E-10
THYROID	1.51E-12
BREAST	1.70E-11
LUNG	2.69E-08
STOMACH	1.15E-11
BOWEL	3.05E-11
LIVER	1.39E-11
PANCREAS	6.67E-12
URINARY	3.68E-10
OTHER	8.15E-12
TOTAL	2.79E-08

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	6.74E-10
INHALATION	2.72E-08
AIR IMMERSION	3.86E-15
GROUND SURFACE	3.01E-11
INTERNAL	2.79E-08
EXTERNAL	3.01E-11
TOTAL	2.79E-08

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	1.22E-08
U-235	6.25E-10
U-236	4.47E-10
U-238	1.22E-08
RA-226	1.21E-12
RA-228	1.51E-12
TH-228	1.04E-09
TH-230	1.25E-09
TH-232	6.56E-11
TH-234	7.85E-11
TOTAL	2.79E-08

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

	Distance (m)						
Direction	1337	1301	2043	1677	1375	1017	1061
N	3.9E-04	4.1E-04	2.2E-04	2.9E-04	3.8E-04	5.5E-04	5.3E-04
NNW	4.1E-04	4.2E-04	2.3E-04	3.0E-04	3.9E-04	5.8E-04	5.5E-04
NW	4.4E-04	4.5E-04	2.5E-04	3.3E-04	4.2E-04	6.0E-04	5.8E-04
WNW	7.5E-04	7.8E-04	4.3E-04	5.6E-04	7.3E-04	1.0E-03	1.0E-03
W	8.6E-04	9.0E-04	4.6E-04	6.2E-04	8.3E-04	1.3E-03	1.2E-03
WSW	5.3E-04	5.5E-04	3.0E-04	3.9E-04	5.1E-04	7.6E-04	7.2E-04
SW	3.4E-04	3.6E-04	2.0E-04	2.6E-04	3.3E-04	4.8E-04	4.5E-04
SSW	4.1E-04	4.3E-04	2.4E-04	3.1E-04	4.0E-04	5.7E-04	5.4E-04
S	5.4E-04	5.6E-04	3.9E-04	4.4E-04	5.3E-04	7.4E-04	7.1E-04
SSE	1.3E-03	1.3E-03	7.6E-04	9.9E-04	1.3E-03	1.7E-03	1.7E-03
SE	1.4E-03	1.4E-03	8.1E-04	1.1E-03	1.4E-03	1.9E-03	1.8E-03
ESE	1.3E-03	1.4E-03	7.6E-04	1.0E-03	1.3E-03	1.8E-03	1.7E-03
E	1.5E-03	1.5E-03	8.2E-04	1.1E-03	1.4E-03	2.1E-03	2.0E-03
ENE	1.5E-03	1.6E-03	8.2E-04	1.1E-03	1.5E-03	2.2E-03	2.1E-03
NE	9.2E-04	9.5E-04	5.0E-04	6.7E-04	8.8E-04	1.3E-03	1.3E-03
NNE	6.7E-04	7.0E-04	3.6E-04	4.8E-04	6.5E-04	9.8E-04	9.3E-04

	Distance (m)						
Direction	1106	1137	1261	1252	1238	1137	1132
N	5.0E-04	4.8E-04	4.2E-04	4.3E-04	4.3E-04	4.8E-04	4.9E-04
NNW	5.2E-04	5.0E-04	4.4E-04	4.4E-04	4.5E-04	5.0E-04	5.1E-04
NW	5.5E-04	5.3E-04	4.7E-04	4.7E-04	4.8E-04	5.3E-04	5.3E-04
WNW	9.5E-04	9.2E-04	8.1E-04	8.2E-04	8.3E-04	9.2E-04	9.2E-04
W	1.1E-03	1.1E-03	9.4E-04	9.5E-04	9.7E-04	1.1E-03	1.1E-03
WSW	6.8E-04	6.6E-04	5.8E-04	5.8E-04	5.9E-04	6.6E-04	6.6E-04
SW	4.3E-04	4.2E-04	3.7E-04	3.7E-04	3.8E-04	4.2E-04	4.2E-04
SSW	5.2E-04	5.0E-04	4.5E-04	4.5E-04	4.5E-04	5.0E-04	5.0E-04
S	6.7E-04	6.5E-04	5.8E-04	5.8E-04	5.9E-04	6.5E-04	6.5E-04
SSE	1.6E-03	1.5E-03	1.4E-03	1.4E-03	1.4E-03	1.5E-03	1.6E-03
SE	1.7E-03	1.7E-03	1.5E-03	1.5E-03	1.5E-03	1.7E-03	1.7E-03
ESE	1.7E-03	1.6E-03	1.4E-03	1.4E-03	1.5E-03	1.6E-03	1.6E-03
E	1.9E-03	1.8E-03	1.6E-03	1.6E-03	1.6E-03	1.8E-03	1.8E-03
ENE	2.0E-03	1.9E-03	1.7E-03	1.7E-03	1.7E-03	1.9E-03	1.9E-03
NE	1.2E-03	1.1E-03	9.9E-04	1.0E-03	1.0E-03	1.1E-03	1.2E-03
NNE	8.7E-04	8.4E-04	7.3E-04	7.4E-04	7.5E-04	8.4E-04	8.5E-04

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

	Distance (m)					
Direction	1735	1264	1094	1095	1724	1729
N	2.8E-04	4.2E-04	5.1E-04	5.1E-04	2.8E-04	2.8E-04
NNW	2.9E-04	4.4E-04	5.3E-04	5.3E-04	2.9E-04	2.9E-04
NW	3.1E-04	4.7E-04	5.6E-04	5.6E-04	3.1E-04	3.1E-04
WNW	5.3E-04	8.1E-04	9.6E-04	9.6E-04	5.4E-04	5.4E-04
W	5.9E-04	9.4E-04	1.2E-03	1.2E-03	5.9E-04	5.9E-04
WSW	3.7E-04	5.7E-04	6.9E-04	6.9E-04	3.8E-04	3.7E-04
SW	2.5E-04	3.7E-04	4.4E-04	4.4E-04	2.5E-04	2.5E-04
SSW	3.0E-04	4.4E-04	5.2E-04	5.2E-04	3.0E-04	3.0E-04
S	4.3E-04	5.8E-04	6.8E-04	6.8E-04	4.3E-04	4.3E-04
SSE	9.5E-04	1.4E-03	1.6E-03	1.6E-03	9.5E-04	9.5E-04
SE	1.0E-03	1.5E-03	1.7E-03	1.7E-03	1.0E-03	1.0E-03
ESE	9.5E-04	1.4E-03	1.7E-03	1.7E-03	9.6E-04	9.6E-04
E	1.0E-03	1.6E-03	1.9E-03	1.9E-03	1.0E-03	1.0E-03
ENE	1.0E-03	1.6E-03	2.0E-03	2.0E-03	1.1E-03	1.1E-03
NE	6.3E-04	9.9E-04	1.2E-03	1.2E-03	6.4E-04	6.4E-04
NNE	4.6E-04	7.3E-04	8.9E-04	8.9E-04	4.6E-04	4.6E-04

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

	Distance (m)						
Direction	1337	1301	2043	1677	1375	1017	1061
N	4.9E-09	5.0E-09	2.7E-09	3.5E-09	4.7E-09	6.9E-09	6.6E-09
NNW	5.0E-09	5.2E-09	2.8E-09	3.7E-09	4.9E-09	7.2E-09	6.8E-09
NW	5.4E-09	5.6E-09	3.0E-09	4.0E-09	5.2E-09	7.6E-09	7.2E-09
WNW	9.5E-09	9.8E-09	5.3E-09	7.0E-09	9.1E-09	1.3E-08	1.3E-08
W	1.1E-08	1.1E-08	5.7E-09	7.7E-09	1.0E-08	1.6E-08	1.5E-08
WSW	6.6E-09	6.9E-09	3.6E-09	4.8E-09	6.4E-09	9.6E-09	9.1E-09
SW	4.2E-09	4.4E-09	2.4E-09	3.1E-09	4.1E-09	5.9E-09	5.7E-09
SSW	5.1E-09	5.3E-09	2.9E-09	3.8E-09	5.0E-09	7.1E-09	6.8E-09
S	6.8E-09	7.0E-09	4.8E-09	5.5E-09	6.6E-09	9.3E-09	8.8E-09
SSE	1.6E-08	1.7E-08	9.6E-09	1.2E-08	1.6E-08	2.2E-08	2.1E-08
SE	1.8E-08	1.8E-08	1.0E-08	1.3E-08	1.7E-08	2.4E-08	2.3E-08
ESE	1.7E-08	1.7E-08	9.5E-09	1.3E-08	1.6E-08	2.3E-08	2.2E-08
E	1.9E-08	1.9E-08	1.0E-08	1.4E-08	1.8E-08	2.6E-08	2.5E-08
ENE	1.9E-08	2.0E-08	1.0E-08	1.4E-08	1.9E-08	2.8E-08	2.6E-08
NE	1.2E-08	1.2E-08	6.2E-09	8.3E-09	1.1E-08	1.7E-08	1.6E-08
NNE	8.4E-09	8.8E-09	4.5E-09	6.0E-09	8.1E-09	1.2E-08	1.2E-08

	Distance (m)						
Direction	1106	1137	1261	1252	1238	1137	1132
N	6.2E-09	6.0E-09	5.3E-09	5.3E-09	5.4E-09	6.0E-09	6.1E-09
NNW	6.5E-09	6.3E-09	5.5E-09	5.5E-09	5.6E-09	6.3E-09	6.3E-09
NW	6.9E-09	6.6E-09	5.8E-09	5.9E-09	6.0E-09	6.6E-09	6.7E-09
WNW	1.2E-08	1.2E-08	1.0E-08	1.0E-08	1.0E-08	1.2E-08	1.2E-08
W	1.4E-08	1.4E-08	1.2E-08	1.2E-08	1.2E-08	1.4E-08	1.4E-08
WSW	8.6E-09	8.3E-09	7.2E-09	7.3E-09	7.4E-09	8.3E-09	8.3E-09
SW	5.4E-09	5.2E-09	4.6E-09	4.6E-09	4.7E-09	5.2E-09	5.2E-09
SSW	6.5E-09	6.3E-09	5.5E-09	5.6E-09	5.7E-09	6.3E-09	6.3E-09
S	8.4E-09	8.1E-09	7.2E-09	7.3E-09	7.4E-09	8.1E-09	8.2E-09
SSE	2.0E-08	2.0E-08	1.8E-08	1.8E-08	1.8E-08	2.0E-08	2.0E-08
SE	2.2E-08	2.1E-08	1.9E-08	1.9E-08	1.9E-08	2.1E-08	2.1E-08
ESE	2.1E-08	2.0E-08	1.8E-08	1.8E-08	1.9E-08	2.0E-08	2.1E-08
E	2.4E-08	2.3E-08	2.0E-08	2.0E-08	2.1E-08	2.3E-08	2.3E-08
ENE	2.5E-08	2.4E-08	2.1E-08	2.1E-08	2.1E-08	2.4E-08	2.4E-08
NE	1.5E-08	1.4E-08	1.3E-08	1.3E-08	1.3E-08	1.4E-08	1.5E-08
NNE	1.1E-08	1.1E-08	9.2E-09	9.3E-09	9.4E-09	1.1E-08	1.1E-08

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

	Distance (m)					
Direction	1735	1264	1094	1095	1724	1729
N	3.4E-09	5.2E-09	6.3E-09	6.3E-09	3.4E-09	3.4E-09
NNW	3.5E-09	5.4E-09	6.6E-09	6.6E-09	3.5E-09	3.5E-09
NW	3.8E-09	5.8E-09	6.9E-09	6.9E-09	3.9E-09	3.8E-09
WNW	6.7E-09	1.0E-08	1.2E-08	1.2E-08	6.7E-09	6.7E-09
W	7.3E-09	1.2E-08	1.5E-08	1.5E-08	7.4E-09	7.4E-09
WSW	4.6E-09	7.2E-09	8.7E-09	8.7E-09	4.6E-09	4.6E-09
SW	3.0E-09	4.5E-09	5.4E-09	5.4E-09	3.0E-09	3.0E-09
SSW	3.7E-09	5.5E-09	6.5E-09	6.5E-09	3.7E-09	3.7E-09
S	5.4E-09	7.2E-09	8.5E-09	8.5E-09	5.4E-09	5.4E-09
SSE	1.2E-08	1.8E-08	2.0E-08	2.0E-08	1.2E-08	1.2E-08
SE	1.3E-08	1.9E-08	2.2E-08	2.2E-08	1.3E-08	1.3E-08
ESE	1.2E-08	1.8E-08	2.1E-08	2.1E-08	1.2E-08	1.2E-08
E	1.3E-08	2.0E-08	2.4E-08	2.4E-08	1.3E-08	1.3E-08
ENE	1.3E-08	2.1E-08	2.5E-08	2.5E-08	1.3E-08	1.3E-08
NE	7.9E-09	1.3E-08	1.5E-08	1.5E-08	8.0E-09	8.0E-09
NNE	5.7E-09	9.1E-09	1.1E-08	1.1E-08	5.8E-09	5.8E-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 3, 1995 3:11 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

1.53E-03

At This Location: 1330 Meters East Northeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Building 11, Respirator Washing Facility

Dataset Name: 94-RWF-(I)-G2
Dataset Date: May 3, 1995 3:11 pm
Wind File: WNDFILES\WIND94.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 1330 Meters East Northeast
Lifetime Fatal Cancer Risk: 1.94E-08

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	4.71E-06
BREAST	5.35E-06
R MAR	2.09E-04
LUNGS	1.15E-02
THYROID	4.59E-06
ENDOST	2.76E-03
RMNDR	1.22E-04
EFFEC	1.53E-03

RADIONUCLIDE EMISSIONS DURING THE YEAR 1994

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	1.00	4.8E-06	4.8E-06
U-235	Y	1.00	2.5E-07	2.5E-07
U-236	Y	1.00	1.9E-07	1.9E-07
U-238	Y	1.00	5.4E-06	5.4E-06
RA-226	W	1.00	3.4E-09	3.4E-09
RA-228	W	1.00	1.4E-08	1.4E-08
TH-228	Y	1.00	1.4E-07	1.4E-07
TH-230	Y	1.00	4.2E-07	4.2E-07
TH-232	Y	1.00	2.3E-08	2.3E-08
TH-234	Y	1.00	2.1E-05	2.1E-05

SITE INFORMATION

Temperature:	12 degrees C
Precipitation:	98 cm/y
Mixing Height:	950 m

SOURCE INFORMATION

Source Number: 1

Stack Height (m): 3.05
Diameter (m): 0.20

Plume Rise
Momentum (m/s): 3.64E+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

1330	1639	2098	1821	2526	2342	2181	1736	1351	2250
2319	1805	2402	1712	2031	2123	2076	1857	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
May 3, 1995 3:11 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Building 11, Respirator Washing Facility

Dataset Name: 94-RWF-(I)-G2
Dataset Date: May 3, 1995 3:11 pm
Wind File: WNDFILES\WIND94.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	4.71E-06
BREAST	5.35E-06
R MAR	2.09E-04
LUNGS	1.15E-02
THYROID	4.59E-06
ENDOST	2.76E-03
RMNDR	1.22E-04
EFFEC	1.53E-03

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	8.74E-05
INHALATION	1.44E-03
AIR IMMERSION	1.21E-10
GROUND SURFACE	9.22E-07
INTERNAL	1.53E-03
EXTERNAL	9.22E-07
TOTAL	1.53E-03

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	6.60E-04
U-235	3.32E-05
U-236	2.42E-05
U-238	6.57E-04
RA-226	6.43E-08
RA-228	1.03E-07
TH-228	3.61E-05
TH-230	1.06E-04
TH-232	8.10E-06
TH-234	1.74E-06
TOTAL	1.53E-03

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	2.05E-10
BONE	1.36E-10
THYROID	1.05E-12
BREAST	1.19E-11
LUNG	1.88E-08
STOMACH	7.95E-12
BOWEL	2.11E-11
LIVER	9.64E-12
PANCREAS	4.62E-12
URINARY	2.53E-10
OTHER	5.65E-12
TOTAL	1.94E-08

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	4.64E-10
INHALATION	1.89E-08
AIR IMMERSION	2.69E-15
GROUND SURFACE	2.12E-11
INTERNAL	1.94E-08
EXTERNAL	2.12E-11
TOTAL	1.94E-08

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	8.46E-09
U-235	4.35E-10
U-236	3.11E-10
U-238	8.50E-09
RA-226	8.44E-13
RA-228	1.05E-12
TH-228	7.23E-10
TH-230	8.69E-10
TH-232	4.56E-11
TH-234	5.45E-11
TOTAL	1.94E-08

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

	Distance (m)						
Direction	1330	1639	2098	1821	2526	2342	2181
N	3.9E-04	2.9E-04	2.0E-04	2.5E-04	1.6E-04	1.7E-04	1.9E-04
NNW	4.0E-04	3.0E-04	2.1E-04	2.6E-04	1.6E-04	1.8E-04	2.0E-04
NW	4.3E-04	3.3E-04	2.3E-04	2.8E-04	1.8E-04	2.0E-04	2.2E-04
WNW	7.5E-04	5.7E-04	4.0E-04	4.9E-04	3.1E-04	3.4E-04	3.8E-04
W	8.6E-04	6.3E-04	4.3E-04	5.4E-04	3.2E-04	3.6E-04	4.1E-04
WSW	5.3E-04	4.0E-04	2.8E-04	3.4E-04	2.1E-04	2.4E-04	2.6E-04
SW	3.4E-04	2.6E-04	1.8E-04	2.2E-04	1.4E-04	1.6E-04	1.7E-04
SSW	4.1E-04	3.1E-04	2.2E-04	2.7E-04	1.7E-04	1.9E-04	2.1E-04
S	5.4E-04	4.4E-04	3.7E-04	4.1E-04	3.3E-04	3.5E-04	3.6E-04
SSE	1.3E-03	1.0E-03	7.3E-04	8.8E-04	5.6E-04	6.2E-04	6.9E-04
SE	1.4E-03	1.1E-03	7.8E-04	9.4E-04	5.9E-04	6.6E-04	7.3E-04
ESE	1.3E-03	1.0E-03	7.2E-04	8.8E-04	5.5E-04	6.2E-04	6.8E-04
E	1.5E-03	1.1E-03	7.8E-04	9.6E-04	5.9E-04	6.6E-04	7.4E-04
ENE	1.5E-03	1.1E-03	7.8E-04	9.7E-04	5.9E-04	6.6E-04	7.4E-04
NE	9.2E-04	6.8E-04	4.7E-04	5.8E-04	3.6E-04	4.0E-04	4.4E-04
NNE	6.7E-04	4.9E-04	3.4E-04	4.2E-04	2.6E-04	2.9E-04	3.2E-04

	Distance (m)						
Direction	1736	1351	2250	2319	1805	2402	1712
N	2.7E-04	3.8E-04	1.9E-04	1.8E-04	2.5E-04	1.7E-04	2.7E-04
NNW	2.8E-04	3.9E-04	1.9E-04	1.8E-04	2.6E-04	1.7E-04	2.8E-04
NW	3.0E-04	4.2E-04	2.1E-04	2.0E-04	2.9E-04	1.9E-04	3.1E-04
WNW	5.3E-04	7.4E-04	3.6E-04	3.5E-04	5.0E-04	3.3E-04	5.4E-04
W	5.8E-04	8.4E-04	3.9E-04	3.7E-04	5.4E-04	3.5E-04	5.9E-04
WSW	3.6E-04	5.2E-04	2.5E-04	2.4E-04	3.4E-04	2.3E-04	3.7E-04
SW	2.4E-04	3.3E-04	1.7E-04	1.6E-04	2.3E-04	1.5E-04	2.4E-04
SSW	2.9E-04	4.0E-04	2.0E-04	1.9E-04	2.8E-04	1.9E-04	3.0E-04
S	4.2E-04	5.3E-04	3.6E-04	3.5E-04	4.1E-04	3.4E-04	4.3E-04
SSE	9.4E-04	1.3E-03	6.6E-04	6.3E-04	8.9E-04	6.0E-04	9.5E-04
SE	1.0E-03	1.4E-03	7.0E-04	6.7E-04	9.5E-04	6.4E-04	1.0E-03
ESE	9.4E-04	1.3E-03	6.5E-04	6.3E-04	8.9E-04	5.9E-04	9.6E-04
E	1.0E-03	1.4E-03	7.0E-04	6.7E-04	9.7E-04	6.4E-04	1.0E-03
ENE	1.0E-03	1.5E-03	7.0E-04	6.7E-04	9.8E-04	6.4E-04	1.1E-03
NE	6.2E-04	9.0E-04	4.2E-04	4.1E-04	5.9E-04	3.8E-04	6.4E-04
NNE	4.5E-04	6.5E-04	3.0E-04	2.9E-04	4.3E-04	2.8E-04	4.6E-04

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

	Distance (m)					
Direction	2031	2123	2076	1857	1890	1850
N	2.1E-04	2.0E-04	2.1E-04	2.4E-04	2.4E-04	2.5E-04
NNW	2.2E-04	2.1E-04	2.1E-04	2.5E-04	2.5E-04	2.5E-04
NW	2.4E-04	2.3E-04	2.4E-04	2.8E-04	2.7E-04	2.8E-04
WNW	4.2E-04	4.0E-04	4.1E-04	4.8E-04	4.7E-04	4.8E-04
W	4.5E-04	4.2E-04	4.4E-04	5.2E-04	5.1E-04	5.2E-04
WSW	2.9E-04	2.7E-04	2.8E-04	3.3E-04	3.2E-04	3.3E-04
SW	1.9E-04	1.8E-04	1.9E-04	2.2E-04	2.1E-04	2.2E-04
SSW	2.3E-04	2.2E-04	2.3E-04	2.6E-04	2.6E-04	2.7E-04
S	3.8E-04	3.7E-04	3.8E-04	4.0E-04	4.0E-04	4.1E-04
SSE	7.6E-04	7.1E-04	7.4E-04	8.6E-04	8.4E-04	8.6E-04
SE	8.1E-04	7.6E-04	7.9E-04	9.2E-04	9.0E-04	9.2E-04
ESE	7.6E-04	7.1E-04	7.3E-04	8.6E-04	8.4E-04	8.6E-04
E	8.2E-04	7.6E-04	7.9E-04	9.3E-04	9.1E-04	9.3E-04
ENE	8.2E-04	7.7E-04	7.9E-04	9.4E-04	9.2E-04	9.5E-04
NE	4.9E-04	4.6E-04	4.8E-04	5.7E-04	5.5E-04	5.7E-04
NNE	3.6E-04	3.3E-04	3.4E-04	4.1E-04	4.0E-04	4.1E-04

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

	Distance (m)						
Direction	1330	1639	2098	1821	2526	2342	2181
N	4.9E-09	3.6E-09	2.5E-09	3.1E-09	1.9E-09	2.1E-09	2.4E-09
NNW	5.0E-09	3.7E-09	2.6E-09	3.2E-09	2.0E-09	2.2E-09	2.5E-09
NW	5.4E-09	4.1E-09	2.9E-09	3.5E-09	2.2E-09	2.4E-09	2.7E-09
WNW	9.5E-09	7.2E-09	5.0E-09	6.2E-09	3.8E-09	4.3E-09	4.8E-09
W	1.1E-08	8.0E-09	5.4E-09	6.8E-09	4.0E-09	4.5E-09	5.1E-09
WSW	6.6E-09	4.9E-09	3.4E-09	4.2E-09	2.6E-09	2.9E-09	3.2E-09
SW	4.2E-09	3.2E-09	2.2E-09	2.7E-09	1.7E-09	1.9E-09	2.1E-09
SSW	5.1E-09	3.9E-09	2.8E-09	3.4E-09	2.1E-09	2.4E-09	2.6E-09
S	6.8E-09	5.6E-09	4.7E-09	5.1E-09	4.1E-09	4.3E-09	4.5E-09
SSE	1.6E-08	1.3E-08	9.2E-09	1.1E-08	7.0E-09	7.8E-09	8.7E-09
SE	1.8E-08	1.4E-08	9.8E-09	1.2E-08	7.5E-09	8.4E-09	9.3E-09
ESE	1.7E-08	1.3E-08	9.1E-09	1.1E-08	6.9E-09	7.8E-09	8.6E-09
E	1.9E-08	1.4E-08	9.8E-09	1.2E-08	7.4E-09	8.3E-09	9.3E-09
ENE	1.9E-08	1.4E-08	9.9E-09	1.2E-08	7.4E-09	8.3E-09	9.3E-09
NE	1.2E-08	8.6E-09	5.9E-09	7.3E-09	4.4E-09	5.0E-09	5.6E-09
NNE	8.4E-09	6.2E-09	4.2E-09	5.3E-09	3.2E-09	3.6E-09	4.0E-09

	Distance (m)						
Direction	1736	1351	2250	2319	1805	2402	1712
N	3.3E-09	4.7E-09	2.3E-09	2.2E-09	3.2E-09	2.1E-09	3.4E-09
NNW	3.4E-09	4.9E-09	2.3E-09	2.2E-09	3.3E-09	2.1E-09	3.5E-09
NW	3.8E-09	5.3E-09	2.6E-09	2.5E-09	3.6E-09	2.4E-09	3.8E-09
WNW	6.6E-09	9.3E-09	4.5E-09	4.3E-09	6.3E-09	4.1E-09	6.8E-09
W	7.3E-09	1.1E-08	4.8E-09	4.6E-09	6.9E-09	4.4E-09	7.4E-09
WSW	4.6E-09	6.5E-09	3.1E-09	3.0E-09	4.3E-09	2.8E-09	4.6E-09
SW	2.9E-09	4.1E-09	2.0E-09	1.9E-09	2.8E-09	1.8E-09	3.0E-09
SSW	3.6E-09	5.0E-09	2.5E-09	2.4E-09	3.4E-09	2.3E-09	3.7E-09
S	5.3E-09	6.7E-09	4.5E-09	4.4E-09	5.2E-09	4.3E-09	5.4E-09
SSE	1.2E-08	1.6E-08	8.3E-09	8.0E-09	1.1E-08	7.6E-09	1.2E-08
SE	1.3E-08	1.7E-08	8.9E-09	8.5E-09	1.2E-08	8.1E-09	1.3E-08
ESE	1.2E-08	1.7E-08	8.2E-09	7.9E-09	1.1E-08	7.5E-09	1.2E-08
E	1.3E-08	1.8E-08	8.9E-09	8.5E-09	1.2E-08	8.0E-09	1.3E-08
ENE	1.3E-08	1.9E-08	8.9E-09	8.5E-09	1.2E-08	8.0E-09	1.3E-08
NE	7.9E-09	1.1E-08	5.3E-09	5.1E-09	7.4E-09	4.8E-09	8.0E-09
NNE	5.7E-09	8.3E-09	3.8E-09	3.6E-09	5.3E-09	3.4E-09	5.8E-09

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

	Distance (m)					
Direction	2031	2123	2076	1857	1890	1850
N	2.6E-09	2.5E-09	2.6E-09	3.0E-09	2.9E-09	3.0E-09
NNW	2.7E-09	2.6E-09	2.6E-09	3.1E-09	3.0E-09	3.1E-09
NW	3.0E-09	2.8E-09	2.9E-09	3.4E-09	3.3E-09	3.4E-09
WNW	5.3E-09	5.0E-09	5.1E-09	6.0E-09	5.9E-09	6.1E-09
W	5.7E-09	5.3E-09	5.5E-09	6.6E-09	6.4E-09	6.6E-09
WSW	3.6E-09	3.4E-09	3.5E-09	4.1E-09	4.0E-09	4.1E-09
SW	2.3E-09	2.2E-09	2.3E-09	2.7E-09	2.6E-09	2.7E-09
SSW	2.9E-09	2.7E-09	2.8E-09	3.3E-09	3.2E-09	3.3E-09
S	4.8E-09	4.6E-09	4.7E-09	5.1E-09	5.0E-09	5.1E-09
SSE	9.6E-09	9.0E-09	9.3E-09	1.1E-08	1.1E-08	1.1E-08
SE	1.0E-08	9.6E-09	1.0E-08	1.2E-08	1.1E-08	1.2E-08
ESE	9.6E-09	9.0E-09	9.3E-09	1.1E-08	1.1E-08	1.1E-08
E	1.0E-08	9.7E-09	1.0E-08	1.2E-08	1.1E-08	1.2E-08
ENE	1.0E-08	9.7E-09	1.0E-08	1.2E-08	1.2E-08	1.2E-08
NE	6.2E-09	5.8E-09	6.0E-09	7.1E-09	6.9E-09	7.2E-09
NNE	4.4E-09	4.2E-09	4.3E-09	5.1E-09	5.0E-09	5.1E-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
May 1, 1995 12:48 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

9.43E-04

At This Location: 921 Meters East Northeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Building 15, General Exhaust (Z005)

Dataset Name: 94-15GEN-(I)-G1
Dataset Date: May 1, 1995 12:35 am
Wind File: WNDFILES\WIND94.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 921 Meters East Northeast
Lifetime Fatal Cancer Risk: 1.18E-08

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	3.84E-06
BREAST	4.37E-06
R MAR	1.49E-04
LUNGS	6.95E-03
THYROID	3.74E-06
ENDOST	1.99E-03
RMNDR	1.01E-04
EFFEC	9.43E-04

RADIONUCLIDE EMISSIONS DURING THE YEAR 1994

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:	12 degrees C
Precipitation:	98 cm/y
Mixing Height:	950 m

SOURCE INFORMATION

Source Number:	1	2
Stack Height (m):	16.80	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

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 1, 1995 12:48 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Building 15, General Exhaust (Z005)

Dataset Name: 94-15GEN-(I)-G1
Dataset Date: May 1, 1995 12:35 am
Wind File: WNDFILES\WIND94.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	3.84E-06
BREAST	4.37E-06
R MAR	1.49E-04
LUNGS	6.95E-03
THYROID	3.74E-06
ENDOST	1.99E-03
RMNDR	1.01E-04
EFFEC	9.43E-04

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	7.39E-05
INHALATION	8.68E-04
AIR IMMERSION	7.29E-11
GROUND SURFACE	7.62E-07
INTERNAL	9.42E-04
EXTERNAL	7.62E-07
TOTAL	9.43E-04

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	4.09E-04
U-235	2.06E-05
U-236	1.50E-05
U-238	4.06E-04
RA-226	4.72E-08
RA-228	7.97E-08
TH-228	2.18E-05
TH-230	6.43E-05
TH-232	4.93E-06
TH-234	1.29E-06
TOTAL	9.43E-04

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	1.49E-10
BONE	9.89E-11
THYROID	8.61E-13
BREAST	9.75E-12
LUNG	1.13E-08
STOMACH	6.48E-12
BOWEL	1.70E-11
LIVER	7.25E-12
PANCREAS	3.77E-12
URINARY	2.12E-10
OTHER	4.61E-12
TOTAL	1.18E-08

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	3.92E-10
INHALATION	1.14E-08
AIR IMMERSION	1.62E-15
GROUND SURFACE	1.75E-11
INTERNAL	1.18E-08
EXTERNAL	1.75E-11
TOTAL	1.18E-08

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	5.17E-09
U-235	2.68E-10
U-236	1.90E-10
U-238	5.18E-09
RA-226	5.54E-13
RA-228	7.58E-13
TH-228	4.37E-10
TH-230	5.25E-10
TH-232	2.77E-11
TH-234	3.57E-11
TOTAL	1.18E-08

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

	Distance (m)						
Direction	1363	1317	2008	1617	1305	921	979
N	1.7E-04	1.8E-04	1.2E-04	1.5E-04	1.8E-04	2.6E-04	2.4E-04
NNW	1.9E-04	2.0E-04	1.3E-04	1.6E-04	2.0E-04	2.6E-04	2.5E-04
NW	1.5E-04	1.6E-04	1.1E-04	1.4E-04	1.6E-04	2.0E-04	1.9E-04
WNW	2.7E-04	2.8E-04	1.9E-04	2.3E-04	2.8E-04	3.7E-04	3.6E-04
W	5.1E-04	5.3E-04	3.2E-04	4.2E-04	5.3E-04	7.7E-04	7.3E-04
WSW	3.1E-04	3.2E-04	1.9E-04	2.5E-04	3.2E-04	4.8E-04	4.5E-04
SW	1.7E-04	1.8E-04	1.1E-04	1.4E-04	1.8E-04	2.7E-04	2.6E-04
SSW	1.7E-04	1.8E-04	1.1E-04	1.4E-04	1.8E-04	2.5E-04	2.4E-04
S	1.7E-04	1.8E-04	1.4E-04	1.6E-04	1.8E-04	2.2E-04	2.1E-04
SSE	3.4E-04	3.5E-04	2.3E-04	2.9E-04	3.5E-04	4.9E-04	4.7E-04
SE	4.1E-04	4.3E-04	2.8E-04	3.4E-04	4.3E-04	6.0E-04	5.7E-04
ESE	4.8E-04	4.9E-04	3.1E-04	4.0E-04	5.0E-04	7.1E-04	6.7E-04
E	5.3E-04	5.5E-04	3.7E-04	4.5E-04	5.5E-04	7.2E-04	7.0E-04
ENE	6.6E-04	6.8E-04	4.4E-04	5.5E-04	6.9E-04	9.4E-04	9.0E-04
NE	5.1E-04	5.3E-04	3.2E-04	4.1E-04	5.3E-04	7.7E-04	7.3E-04
NNE	3.2E-04	3.3E-04	2.1E-04	2.7E-04	3.3E-04	4.6E-04	4.4E-04

	Distance (m)						
Direction	1035	1068	1204	1199	1207	1133	1135
N	2.3E-04	2.3E-04	2.0E-04	2.0E-04	2.0E-04	2.1E-04	2.1E-04
NNW	2.4E-04	2.3E-04	2.1E-04	2.1E-04	2.1E-04	2.2E-04	2.2E-04
NW	1.8E-04	1.8E-04	1.7E-04	1.7E-04	1.7E-04	1.7E-04	1.7E-04
WNW	3.4E-04	3.4E-04	3.0E-04	3.0E-04	3.0E-04	3.2E-04	3.2E-04
W	6.9E-04	6.7E-04	5.8E-04	5.9E-04	5.8E-04	6.3E-04	6.2E-04
WSW	4.2E-04	4.1E-04	3.6E-04	3.6E-04	3.5E-04	3.8E-04	3.8E-04
SW	2.4E-04	2.3E-04	2.0E-04	2.0E-04	2.0E-04	2.2E-04	2.2E-04
SSW	2.3E-04	2.2E-04	1.9E-04	1.9E-04	1.9E-04	2.1E-04	2.1E-04
S	2.0E-04	2.0E-04	1.9E-04	1.9E-04	1.9E-04	1.9E-04	1.9E-04
SSE	4.4E-04	4.3E-04	3.8E-04	3.9E-04	3.8E-04	4.1E-04	4.1E-04
SE	5.4E-04	5.3E-04	4.7E-04	4.7E-04	4.7E-04	5.0E-04	5.0E-04
ESE	6.4E-04	6.2E-04	5.4E-04	5.5E-04	5.4E-04	5.8E-04	5.8E-04
E	6.7E-04	6.5E-04	5.9E-04	5.9E-04	5.9E-04	6.2E-04	6.2E-04
ENE	8.6E-04	8.4E-04	7.5E-04	7.5E-04	7.5E-04	7.9E-04	7.9E-04
NE	6.9E-04	6.6E-04	5.8E-04	5.9E-04	5.8E-04	6.2E-04	6.2E-04
NNE	4.2E-04	4.0E-04	3.6E-04	3.6E-04	3.6E-04	3.8E-04	3.8E-04

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

	Distance (m)					
Direction	1763	1317	1182	1186	1811	1796
N	1.3E-04	1.8E-04	2.0E-04	2.0E-04	1.3E-04	1.3E-04
NNW	1.5E-04	2.0E-04	2.2E-04	2.2E-04	1.4E-04	1.4E-04
NW	1.3E-04	1.6E-04	1.7E-04	1.7E-04	1.2E-04	1.2E-04
WNW	2.1E-04	2.8E-04	3.1E-04	3.1E-04	2.1E-04	2.1E-04
W	3.8E-04	5.3E-04	6.0E-04	5.9E-04	3.6E-04	3.7E-04
WSW	2.2E-04	3.2E-04	3.6E-04	3.6E-04	2.2E-04	2.2E-04
SW	1.3E-04	1.8E-04	2.1E-04	2.1E-04	1.2E-04	1.3E-04
SSW	1.3E-04	1.8E-04	2.0E-04	2.0E-04	1.3E-04	1.3E-04
S	1.5E-04	1.8E-04	1.9E-04	1.9E-04	1.5E-04	1.5E-04
SSE	2.6E-04	3.5E-04	3.9E-04	3.9E-04	2.6E-04	2.6E-04
SE	3.2E-04	4.3E-04	4.8E-04	4.7E-04	3.1E-04	3.1E-04
ESE	3.6E-04	4.9E-04	5.6E-04	5.5E-04	3.5E-04	3.5E-04
E	4.1E-04	5.5E-04	6.0E-04	6.0E-04	4.0E-04	4.1E-04
ENE	5.1E-04	6.8E-04	7.6E-04	7.6E-04	4.9E-04	5.0E-04
NE	3.7E-04	5.3E-04	6.0E-04	5.9E-04	3.6E-04	3.6E-04
NNE	2.4E-04	3.3E-04	3.7E-04	3.6E-04	2.4E-04	2.4E-04

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

	Distance (m)						
Direction	1363	1317	2008	1617	1305	921	979
N	2.1E-09	2.2E-09	1.4E-09	1.8E-09	2.2E-09	3.2E-09	3.0E-09
NNW	2.3E-09	2.4E-09	1.6E-09	2.0E-09	2.4E-09	3.2E-09	3.1E-09
NW	1.9E-09	1.9E-09	1.4E-09	1.6E-09	1.9E-09	2.4E-09	2.3E-09
WNW	3.3E-09	3.4E-09	2.3E-09	2.8E-09	3.5E-09	4.6E-09	4.4E-09
W	6.4E-09	6.6E-09	4.0E-09	5.2E-09	6.7E-09	9.7E-09	9.2E-09
WSW	3.8E-09	4.0E-09	2.3E-09	3.1E-09	4.0E-09	6.0E-09	5.6E-09
SW	2.1E-09	2.2E-09	1.3E-09	1.7E-09	2.2E-09	3.4E-09	3.2E-09
SSW	2.1E-09	2.1E-09	1.4E-09	1.7E-09	2.2E-09	3.1E-09	2.9E-09
S	2.1E-09	2.1E-09	1.7E-09	1.9E-09	2.1E-09	2.6E-09	2.5E-09
SSE	4.2E-09	4.3E-09	2.9E-09	3.5E-09	4.4E-09	6.1E-09	5.8E-09
SE	5.1E-09	5.3E-09	3.4E-09	4.2E-09	5.3E-09	7.4E-09	7.1E-09
ESE	5.9E-09	6.2E-09	3.9E-09	4.9E-09	6.2E-09	8.8E-09	8.4E-09
E	6.6E-09	6.8E-09	4.5E-09	5.6E-09	6.9E-09	9.0E-09	8.7E-09
ENE	8.3E-09	8.6E-09	5.5E-09	6.9E-09	8.6E-09	1.2E-08	1.1E-08
NE	6.3E-09	6.6E-09	3.9E-09	5.2E-09	6.7E-09	9.6E-09	9.1E-09
NNE	3.9E-09	4.1E-09	2.6E-09	3.3E-09	4.1E-09	5.7E-09	5.5E-09

	Distance (m)						
Direction	1035	1068	1204	1199	1207	1133	1135
N	2.9E-09	2.8E-09	2.4E-09	2.4E-09	2.4E-09	2.6E-09	2.6E-09
NNW	3.0E-09	2.9E-09	2.6E-09	2.6E-09	2.6E-09	2.7E-09	2.7E-09
NW	2.2E-09	2.2E-09	2.0E-09	2.0E-09	2.0E-09	2.1E-09	2.1E-09
WNW	4.2E-09	4.1E-09	3.7E-09	3.7E-09	3.7E-09	3.9E-09	3.9E-09
W	8.7E-09	8.4E-09	7.3E-09	7.4E-09	7.3E-09	7.9E-09	7.8E-09
WSW	5.3E-09	5.1E-09	4.4E-09	4.4E-09	4.4E-09	4.8E-09	4.7E-09
SW	3.0E-09	2.9E-09	2.5E-09	2.5E-09	2.5E-09	2.7E-09	2.7E-09
SSW	2.8E-09	2.7E-09	2.4E-09	2.4E-09	2.4E-09	2.5E-09	2.5E-09
S	2.4E-09	2.4E-09	2.2E-09	2.2E-09	2.2E-09	2.3E-09	2.3E-09
SSE	5.5E-09	5.3E-09	4.7E-09	4.7E-09	4.7E-09	5.0E-09	5.0E-09
SE	6.7E-09	6.5E-09	5.8E-09	5.8E-09	5.8E-09	6.1E-09	6.1E-09
ESE	7.9E-09	7.7E-09	6.8E-09	6.8E-09	6.8E-09	7.2E-09	7.2E-09
E	8.4E-09	8.2E-09	7.4E-09	7.4E-09	7.4E-09	7.8E-09	7.8E-09
ENE	1.1E-08	1.0E-08	9.4E-09	9.4E-09	9.3E-09	9.9E-09	9.9E-09
NE	8.6E-09	8.3E-09	7.3E-09	7.3E-09	7.3E-09	7.8E-09	7.8E-09
NNE	5.2E-09	5.0E-09	4.5E-09	4.5E-09	4.5E-09	4.7E-09	4.7E-09

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

	Distance (m)					
Direction	1763	1317	1182	1186	1811	1796
N	1.6E-09	2.2E-09	2.5E-09	2.5E-09	1.6E-09	1.6E-09
NNW	1.8E-09	2.4E-09	2.6E-09	2.6E-09	1.7E-09	1.7E-09
NW	1.5E-09	1.9E-09	2.1E-09	2.0E-09	1.5E-09	1.5E-09
WNW	2.6E-09	3.4E-09	3.8E-09	3.8E-09	2.5E-09	2.5E-09
W	4.7E-09	6.6E-09	7.5E-09	7.5E-09	4.5E-09	4.6E-09
WSW	2.7E-09	4.0E-09	4.5E-09	4.5E-09	2.6E-09	2.7E-09
SW	1.5E-09	2.2E-09	2.5E-09	2.5E-09	1.5E-09	1.5E-09
SSW	1.6E-09	2.1E-09	2.4E-09	2.4E-09	1.5E-09	1.5E-09
S	1.8E-09	2.1E-09	2.2E-09	2.2E-09	1.8E-09	1.8E-09
SSE	3.2E-09	4.3E-09	4.8E-09	4.8E-09	3.1E-09	3.2E-09
SE	3.9E-09	5.3E-09	5.9E-09	5.9E-09	3.8E-09	3.8E-09
ESE	4.5E-09	6.2E-09	6.9E-09	6.9E-09	4.3E-09	4.4E-09
E	5.1E-09	6.8E-09	7.5E-09	7.5E-09	5.0E-09	5.1E-09
ENE	6.3E-09	8.6E-09	9.5E-09	9.5E-09	6.2E-09	6.2E-09
NE	4.6E-09	6.6E-09	7.5E-09	7.4E-09	4.5E-09	4.5E-09
NNE	3.0E-09	4.1E-09	4.6E-09	4.5E-09	2.9E-09	2.9E-09

0035

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 1, 1995 12:48 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

6.51E-04

At This Location: 1374 Meters East Northeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Building 15, General Exhaust (Z005)

Dataset Name: 94-15GEN-(I)-G2
Dataset Date: May 1, 1995 12:37 am
Wind File: WNDFILES\WIND94.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 1374 Meters East Northeast
Lifetime Fatal Cancer Risk: 8.18E-09

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	2.61E-06
BREAST	2.97E-06
R MAR	1.02E-04
LUNGS	4.80E-03
THYROID	2.54E-06
ENDOST	1.36E-03
RMNDR	6.87E-05
EFFEC	6.51E-04

RADIONUCLIDE EMISSIONS DURING THE YEAR 1994

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:	12 degrees C
Precipitation:	98 cm/y
Mixing Height:	950 m

SOURCE INFORMATION

Source Number:	1	2
Stack Height (m):	16.80	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
May 1, 1995 12:48 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Building 15, General Exhaust (Z005)

Dataset Name: 94-15GEN-(I)-G2
Dataset Date: May 1, 1995 12:37 am
Wind File: WNDFILES\WIND94.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	2.61E-06
BREAST	2.97E-06
R MAR	1.02E-04
LUNGS	4.80E-03
THYROID	2.54E-06
ENDOST	1.36E-03
RMNDR	6.87E-05
EFFEC	6.51E-04

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	5.00E-05
INHALATION	6.01E-04
AIR IMMERSION	5.04E-11
GROUND SURFACE	5.19E-07
INTERNAL	6.51E-04
EXTERNAL	5.19E-07
TOTAL	6.51E-04

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	2.82E-04
U-235	1.42E-05
U-236	1.04E-05
U-238	2.80E-04
RA-226	3.22E-08
RA-228	5.42E-08
TH-228	1.51E-05
TH-230	4.44E-05
TH-232	3.41E-06
TH-234	8.79E-07
TOTAL	6.51E-04

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	1.02E-10
BONE	6.75E-11
THYROID	5.85E-13
BREAST	6.62E-12
LUNG	7.83E-09
STOMACH	4.40E-12
BOWEL	1.16E-11
LIVER	4.94E-12
PANCREAS	2.56E-12
URINARY	1.44E-10
OTHER	3.13E-12
TOTAL	8.18E-09

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	2.65E-10
INHALATION	7.90E-09
AIR IMMERSION	1.12E-15
GROUND SURFACE	1.19E-11
INTERNAL	8.17E-09
EXTERNAL	1.19E-11
TOTAL	8.18E-09

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	3.57E-09
U-235	1.85E-10
U-236	1.31E-10
U-238	3.58E-09
RA-226	3.81E-13
RA-228	5.17E-13
TH-228	3.02E-10
TH-230	3.63E-10
TH-232	1.92E-11
TH-234	2.45E-11
TOTAL	8.18E-09

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

	Distance (m)						
Direction	1374	1643	2013	1916	2622	2247	2239
N	1.7E-04	1.4E-04	1.1E-04	1.2E-04	8.7E-05	1.0E-04	1.0E-04
NNW	1.8E-04	1.5E-04	1.3E-04	1.3E-04	9.5E-05	1.1E-04	1.1E-04
NW	1.5E-04	1.3E-04	1.1E-04	1.1E-04	8.8E-05	1.0E-04	1.0E-04
WNW	2.6E-04	2.2E-04	1.8E-04	1.9E-04	1.4E-04	1.7E-04	1.7E-04
W	5.0E-04	4.0E-04	3.2E-04	3.4E-04	2.3E-04	2.8E-04	2.8E-04
WSW	3.0E-04	2.4E-04	1.9E-04	2.0E-04	1.3E-04	1.6E-04	1.6E-04
SW	1.7E-04	1.4E-04	1.1E-04	1.1E-04	7.8E-05	9.3E-05	9.3E-05
SSW	1.7E-04	1.4E-04	1.1E-04	1.2E-04	8.4E-05	9.8E-05	9.8E-05
S	1.7E-04	1.5E-04	1.4E-04	1.4E-04	1.1E-04	1.3E-04	1.3E-04
SSE	3.3E-04	2.8E-04	2.3E-04	2.4E-04	1.9E-04	2.1E-04	2.1E-04
SE	4.0E-04	3.3E-04	2.7E-04	2.9E-04	2.2E-04	2.5E-04	2.5E-04
ESE	4.7E-04	3.8E-04	3.1E-04	3.3E-04	2.4E-04	2.8E-04	2.8E-04
E	5.2E-04	4.4E-04	3.6E-04	3.8E-04	2.8E-04	3.3E-04	3.3E-04
ENE	6.5E-04	5.4E-04	4.4E-04	4.6E-04	3.4E-04	3.9E-04	3.9E-04
NE	5.0E-04	4.0E-04	3.1E-04	3.3E-04	2.3E-04	2.7E-04	2.8E-04
NNE	3.1E-04	2.6E-04	2.1E-04	2.2E-04	1.6E-04	1.9E-04	1.9E-04

	Distance (m)						
Direction	1735	1411	2347	2415	1802	2307	1654
N	1.3E-04	1.6E-04	9.6E-05	9.4E-05	1.3E-04	9.8E-05	1.4E-04
NNW	1.5E-04	1.8E-04	1.1E-04	1.0E-04	1.4E-04	1.1E-04	1.5E-04
NW	1.2E-04	1.5E-04	9.7E-05	9.4E-05	1.2E-04	9.8E-05	1.3E-04
WNW	2.1E-04	2.6E-04	1.6E-04	1.6E-04	2.0E-04	1.6E-04	2.2E-04
W	3.8E-04	4.8E-04	2.6E-04	2.5E-04	3.6E-04	2.7E-04	4.0E-04
WSW	2.2E-04	2.9E-04	1.5E-04	1.5E-04	2.1E-04	1.6E-04	2.4E-04
SW	1.3E-04	1.6E-04	8.9E-05	8.6E-05	1.2E-04	9.0E-05	1.3E-04
SSW	1.3E-04	1.6E-04	9.4E-05	9.1E-05	1.2E-04	9.5E-05	1.4E-04
S	1.5E-04	1.7E-04	1.2E-04	1.2E-04	1.5E-04	1.2E-04	1.5E-04
SSE	2.6E-04	3.2E-04	2.0E-04	2.0E-04	2.5E-04	2.1E-04	2.8E-04
SE	3.2E-04	3.9E-04	2.4E-04	2.3E-04	3.0E-04	2.4E-04	3.3E-04
ESE	3.6E-04	4.6E-04	2.7E-04	2.6E-04	3.5E-04	2.7E-04	3.8E-04
E	4.2E-04	5.1E-04	3.1E-04	3.1E-04	4.0E-04	3.2E-04	4.4E-04
ENE	5.1E-04	6.3E-04	3.8E-04	3.7E-04	4.9E-04	3.8E-04	5.4E-04
NE	3.8E-04	4.8E-04	2.6E-04	2.5E-04	3.6E-04	2.7E-04	4.0E-04
NNE	2.4E-04	3.0E-04	1.8E-04	1.7E-04	2.3E-04	1.8E-04	2.6E-04

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

	Distance (m)					
Direction	1993	2083	2035	1766	1798	1913
N	1.1E-04	1.1E-04	1.1E-04	1.3E-04	1.3E-04	1.2E-04
NNW	1.3E-04	1.2E-04	1.2E-04	1.4E-04	1.4E-04	1.3E-04
NW	1.1E-04	1.1E-04	1.1E-04	1.2E-04	1.2E-04	1.1E-04
WNW	1.9E-04	1.8E-04	1.8E-04	2.1E-04	2.0E-04	1.9E-04
W	3.2E-04	3.0E-04	3.1E-04	3.7E-04	3.6E-04	3.4E-04
WSW	1.9E-04	1.8E-04	1.8E-04	2.2E-04	2.1E-04	2.0E-04
SW	1.1E-04	1.0E-04	1.0E-04	1.2E-04	1.2E-04	1.1E-04
SSW	1.1E-04	1.1E-04	1.1E-04	1.3E-04	1.2E-04	1.2E-04
S	1.4E-04	1.3E-04	1.4E-04	1.5E-04	1.5E-04	1.4E-04
SSE	2.3E-04	2.2E-04	2.3E-04	2.6E-04	2.5E-04	2.4E-04
SE	2.8E-04	2.7E-04	2.7E-04	3.1E-04	3.0E-04	2.9E-04
ESE	3.1E-04	3.0E-04	3.1E-04	3.6E-04	3.5E-04	3.3E-04
E	3.7E-04	3.5E-04	3.6E-04	4.1E-04	4.0E-04	3.8E-04
ENE	4.4E-04	4.2E-04	4.3E-04	5.0E-04	4.9E-04	4.6E-04
NE	3.2E-04	3.0E-04	3.1E-04	3.7E-04	3.6E-04	3.3E-04
NNE	2.1E-04	2.0E-04	2.1E-04	2.4E-04	2.3E-04	2.2E-04

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

	Distance (m)						
Direction	1374	1643	2013	1916	2622	2247	2239
N	2.1E-09	1.7E-09	1.4E-09	1.4E-09	1.0E-09	1.2E-09	1.2E-09
NNW	2.3E-09	1.9E-09	1.5E-09	1.6E-09	1.1E-09	1.4E-09	1.4E-09
NW	1.8E-09	1.6E-09	1.3E-09	1.4E-09	1.1E-09	1.2E-09	1.2E-09
WNW	3.3E-09	2.8E-09	2.3E-09	2.4E-09	1.8E-09	2.0E-09	2.0E-09
W	6.3E-09	5.1E-09	4.0E-09	4.2E-09	2.9E-09	3.5E-09	3.5E-09
WSW	3.7E-09	3.0E-09	2.3E-09	2.4E-09	1.6E-09	2.0E-09	2.0E-09
SW	2.1E-09	1.7E-09	1.3E-09	1.4E-09	9.3E-10	1.1E-09	1.1E-09
SSW	2.0E-09	1.7E-09	1.3E-09	1.4E-09	1.0E-09	1.2E-09	1.2E-09
S	2.0E-09	1.9E-09	1.7E-09	1.7E-09	1.4E-09	1.5E-09	1.5E-09
SSE	4.1E-09	3.4E-09	2.8E-09	3.0E-09	2.3E-09	2.6E-09	2.6E-09
SE	5.0E-09	4.1E-09	3.4E-09	3.5E-09	2.7E-09	3.1E-09	3.1E-09
ESE	5.9E-09	4.8E-09	3.8E-09	4.1E-09	3.0E-09	3.4E-09	3.5E-09
E	6.5E-09	5.5E-09	4.5E-09	4.7E-09	3.5E-09	4.1E-09	4.1E-09
ENE	8.2E-09	6.8E-09	5.5E-09	5.8E-09	4.2E-09	4.9E-09	4.9E-09
NE	6.2E-09	5.0E-09	3.9E-09	4.2E-09	2.8E-09	3.4E-09	3.4E-09
NNE	3.9E-09	3.2E-09	2.6E-09	2.7E-09	2.0E-09	2.3E-09	2.3E-09

	Distance (m)						
Direction	1735	1411	2347	2415	1802	2307	1654
N	1.6E-09	2.0E-09	1.2E-09	1.1E-09	1.5E-09	1.2E-09	1.7E-09
NNW	1.8E-09	2.2E-09	1.3E-09	1.3E-09	1.7E-09	1.3E-09	1.9E-09
NW	1.5E-09	1.8E-09	1.2E-09	1.1E-09	1.5E-09	1.2E-09	1.6E-09
WNW	2.6E-09	3.2E-09	2.0E-09	1.9E-09	2.5E-09	2.0E-09	2.7E-09
W	4.7E-09	6.1E-09	3.3E-09	3.2E-09	4.5E-09	3.4E-09	5.0E-09
WSW	2.8E-09	3.6E-09	1.9E-09	1.8E-09	2.6E-09	1.9E-09	3.0E-09
SW	1.5E-09	2.0E-09	1.1E-09	1.0E-09	1.5E-09	1.1E-09	1.6E-09
SSW	1.6E-09	2.0E-09	1.1E-09	1.1E-09	1.5E-09	1.1E-09	1.6E-09
S	1.8E-09	2.0E-09	1.5E-09	1.5E-09	1.8E-09	1.5E-09	1.8E-09
SSE	3.2E-09	4.0E-09	2.5E-09	2.5E-09	3.1E-09	2.5E-09	3.4E-09
SE	3.9E-09	4.9E-09	3.0E-09	2.9E-09	3.8E-09	3.0E-09	4.1E-09
ESE	4.5E-09	5.7E-09	3.3E-09	3.2E-09	4.3E-09	3.4E-09	4.8E-09
E	5.2E-09	6.4E-09	3.9E-09	3.8E-09	5.0E-09	4.0E-09	5.5E-09
ENE	6.4E-09	8.0E-09	4.7E-09	4.6E-09	6.2E-09	4.8E-09	6.7E-09
NE	4.7E-09	6.1E-09	3.2E-09	3.1E-09	4.5E-09	3.3E-09	5.0E-09
NNE	3.0E-09	3.8E-09	2.2E-09	2.1E-09	2.9E-09	2.2E-09	3.2E-09

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

	Distance (m)					
Direction	1993	2083	2035	1766	1798	1913
N	1.4E-09	1.3E-09	1.3E-09	1.6E-09	1.5E-09	1.4E-09
NNW	1.5E-09	1.5E-09	1.5E-09	1.8E-09	1.7E-09	1.6E-09
NW	1.3E-09	1.3E-09	1.3E-09	1.5E-09	1.5E-09	1.4E-09
WNW	2.3E-09	2.2E-09	2.2E-09	2.6E-09	2.5E-09	2.4E-09
W	4.0E-09	3.8E-09	3.9E-09	4.6E-09	4.5E-09	4.2E-09
WSW	2.3E-09	2.2E-09	2.3E-09	2.7E-09	2.7E-09	2.4E-09
SW	1.3E-09	1.2E-09	1.3E-09	1.5E-09	1.5E-09	1.4E-09
SSW	1.3E-09	1.3E-09	1.3E-09	1.5E-09	1.5E-09	1.4E-09
S	1.7E-09	1.6E-09	1.6E-09	1.8E-09	1.8E-09	1.7E-09
SSE	2.9E-09	2.7E-09	2.8E-09	3.2E-09	3.1E-09	3.0E-09
SE	3.4E-09	3.3E-09	3.3E-09	3.8E-09	3.8E-09	3.5E-09
ESE	3.9E-09	3.7E-09	3.8E-09	4.4E-09	4.3E-09	4.1E-09
E	4.6E-09	4.4E-09	4.5E-09	5.1E-09	5.0E-09	4.7E-09
ENE	5.6E-09	5.3E-09	5.4E-09	6.3E-09	6.2E-09	5.8E-09
NE	4.0E-09	3.8E-09	3.9E-09	4.6E-09	4.5E-09	4.2E-09
NNE	2.6E-09	2.5E-09	2.6E-09	3.0E-09	2.9E-09	2.7E-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
Jun 5, 1995 10:41 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

4.39E-05

At This Location: 921 Meters East Northeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Building 15, MEPA/HEPA Exhaust (Z004)

Dataset Name: 94-15HEPA-(I)-G1
Dataset Date: Jun 5, 1995 10:32 am
Wind File: WNDFILES\WIND94.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 921 Meters East Northeast
Lifetime Fatal Cancer Risk: 5.46E-10

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	1.08E-07
BREAST	1.21E-07
R MAR	7.81E-06
LUNGS	3.27E-04
THYROID	1.06E-07
ENDOST	9.96E-05
RMNDR	2.33E-06
EFFEC	4.39E-05

RADIONUCLIDE EMISSIONS DURING THE YEAR 1994

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	0.30	7.1E-08	7.1E-08
U-235	Y	1.00	6.0E-09	6.0E-09
U-236	Y	1.00	6.0E-09	6.0E-09
U-238	Y	0.30	1.8E-07	1.8E-07
TH-228	Y	0.30	9.3E-09	9.3E-09
TH-230	Y	0.30	1.3E-08	1.3E-08
TH-232	Y	0.30	1.0E-08	1.0E-08

SITE INFORMATION

Temperature: 12 degrees C
Precipitation: 98 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

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

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
Jun 5, 1995 10:41 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Building 15, MEPA/HEPA Exhaust (Z004)

Dataset Name: 94-15HEPA-(I)-G1
Dataset Date: Jun 5, 1995 10:32 am
Wind File: WNDFILES\WIND94.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	1.08E-07
BREAST	1.21E-07
R MAR	7.81E-06
LUNGS	3.27E-04
THYROID	1.06E-07
ENDOST	9.96E-05
RMNDR	2.33E-06
EFFEC	4.39E-05

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	1.69E-06
INHALATION	4.22E-05
AIR IMMERSION	3.54E-13
GROUND SURFACE	1.67E-08
INTERNAL	4.39E-05
EXTERNAL	1.67E-08
TOTAL	4.39E-05

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	1.02E-05
U-235	4.89E-07
U-236	4.84E-07
U-238	2.31E-05
TH-228	2.46E-06
TH-230	3.35E-06
TH-232	3.74E-06
TOTAL	4.39E-05

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	7.28E-12
BONE	4.70E-12
THYROID	2.27E-14
BREAST	2.47E-13
LUNG	5.28E-10
STOMACH	1.54E-13
BOWEL	2.21E-13
LIVER	3.09E-13
PANCREAS	1.03E-13
URINARY	4.89E-12
OTHER	1.25E-13
TOTAL	5.46E-10

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	8.93E-12
INHALATION	5.37E-10
AIR IMMERSION	8.23E-18
GROUND SURFACE	3.85E-13
INTERNAL	5.46E-10
EXTERNAL	3.85E-13
TOTAL	5.46E-10

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	1.33E-10
U-235	6.37E-12
U-236	6.15E-12
U-238	3.02E-10
TH-228	4.97E-11
TH-230	2.80E-11
TH-232	2.13E-11
TOTAL	5.46E-10

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

	Distance (m)						
Direction	1363	1317	2008	1617	1305	921	979
N	7.4E-06	7.7E-06	5.0E-06	6.2E-06	7.8E-06	1.1E-05	1.1E-05
NNW	8.4E-06	8.7E-06	5.6E-06	7.0E-06	8.8E-06	1.2E-05	1.2E-05
NW	7.2E-06	7.4E-06	5.2E-06	6.3E-06	7.5E-06	9.8E-06	9.4E-06
WNW	1.2E-05	1.3E-05	8.6E-06	1.0E-05	1.3E-05	1.8E-05	1.7E-05
W	2.2E-05	2.3E-05	1.4E-05	1.8E-05	2.3E-05	3.4E-05	3.2E-05
WSW	1.3E-05	1.3E-05	7.8E-06	1.0E-05	1.3E-05	2.1E-05	1.9E-05
SW	7.1E-06	7.4E-06	4.5E-06	5.8E-06	7.5E-06	1.2E-05	1.1E-05
SSW	7.2E-06	7.5E-06	4.9E-06	6.1E-06	7.6E-06	1.1E-05	1.0E-05
S	8.5E-06	8.7E-06	6.6E-06	7.7E-06	8.7E-06	1.0E-05	1.0E-05
SSE	1.5E-05	1.6E-05	1.1E-05	1.3E-05	1.6E-05	2.2E-05	2.1E-05
SE	1.8E-05	1.9E-05	1.3E-05	1.6E-05	1.9E-05	2.7E-05	2.5E-05
ESE	2.1E-05	2.2E-05	1.4E-05	1.8E-05	2.2E-05	3.2E-05	3.0E-05
E	2.4E-05	2.5E-05	1.7E-05	2.1E-05	2.5E-05	3.5E-05	3.3E-05
ENE	3.0E-05	3.1E-05	2.0E-05	2.5E-05	3.1E-05	4.4E-05	4.1E-05
NE	2.1E-05	2.2E-05	1.3E-05	1.7E-05	2.3E-05	3.4E-05	3.2E-05
NNE	1.4E-05	1.4E-05	9.4E-06	1.2E-05	1.5E-05	2.1E-05	2.0E-05

	Distance (m)						
Direction	1035	1068	1204	1199	1207	1133	1135
N	1.0E-05	9.7E-06	8.5E-06	8.5E-06	8.5E-06	9.1E-06	9.1E-06
NNW	1.1E-05	1.1E-05	9.5E-06	9.6E-06	9.5E-06	1.0E-05	1.0E-05
NW	9.0E-06	8.8E-06	8.0E-06	8.1E-06	8.0E-06	8.4E-06	8.4E-06
WNW	1.6E-05	1.5E-05	1.4E-05	1.4E-05	1.4E-05	1.5E-05	1.5E-05
W	3.0E-05	2.9E-05	2.5E-05	2.5E-05	2.5E-05	2.7E-05	2.7E-05
WSW	1.8E-05	1.7E-05	1.5E-05	1.5E-05	1.5E-05	1.6E-05	1.6E-05
SW	1.0E-05	9.6E-06	8.2E-06	8.3E-06	8.2E-06	8.9E-06	8.9E-06
SSW	9.8E-06	9.5E-06	8.3E-06	8.3E-06	8.3E-06	8.9E-06	8.8E-06
S	9.8E-06	9.6E-06	9.1E-06	9.1E-06	9.1E-06	9.4E-06	9.3E-06
SSE	2.0E-05	1.9E-05	1.7E-05	1.7E-05	1.7E-05	1.8E-05	1.8E-05
SE	2.4E-05	2.3E-05	2.1E-05	2.1E-05	2.0E-05	2.2E-05	2.2E-05
ESE	2.8E-05	2.7E-05	2.4E-05	2.4E-05	2.4E-05	2.5E-05	2.5E-05
E	3.2E-05	3.1E-05	2.7E-05	2.7E-05	2.7E-05	2.9E-05	2.9E-05
ENE	3.9E-05	3.8E-05	3.4E-05	3.4E-05	3.4E-05	3.6E-05	3.6E-05
NE	3.0E-05	2.9E-05	2.5E-05	2.5E-05	2.5E-05	2.7E-05	2.7E-05
NNE	1.9E-05	1.8E-05	1.6E-05	1.6E-05	1.6E-05	1.7E-05	1.7E-05

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

	Distance (m)					
Direction	1763	1317	1182	1186	1811	1796
N	5.7E-06	7.7E-06	8.7E-06	8.6E-06	5.6E-06	5.6E-06
NNW	6.4E-06	8.7E-06	9.7E-06	9.7E-06	6.2E-06	6.3E-06
NW	5.8E-06	7.4E-06	8.1E-06	8.1E-06	5.7E-06	5.7E-06
WNW	9.7E-06	1.3E-05	1.4E-05	1.4E-05	9.4E-06	9.5E-06
W	1.6E-05	2.3E-05	2.6E-05	2.6E-05	1.5E-05	1.6E-05
WSW	9.2E-06	1.3E-05	1.5E-05	1.5E-05	8.9E-06	9.0E-06
SW	5.2E-06	7.4E-06	8.4E-06	8.4E-06	5.1E-06	5.1E-06
SSW	5.6E-06	7.5E-06	8.5E-06	8.4E-06	5.4E-06	5.5E-06
S	7.3E-06	8.7E-06	9.2E-06	9.1E-06	7.1E-06	7.2E-06
SSE	1.2E-05	1.6E-05	1.7E-05	1.7E-05	1.2E-05	1.2E-05
SE	1.5E-05	1.9E-05	2.1E-05	2.1E-05	1.4E-05	1.4E-05
ESE	1.6E-05	2.2E-05	2.4E-05	2.4E-05	1.6E-05	1.6E-05
E	1.9E-05	2.5E-05	2.8E-05	2.8E-05	1.9E-05	1.9E-05
ENE	2.3E-05	3.1E-05	3.4E-05	3.4E-05	2.2E-05	2.2E-05
NE	1.6E-05	2.2E-05	2.5E-05	2.5E-05	1.5E-05	1.5E-05
NNE	1.1E-05	1.4E-05	1.6E-05	1.6E-05	1.0E-05	1.1E-05

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

Direction	Distance (m) 1363	1317	2008	1617	1305	921	979
N	9.1E-11	9.4E-11	6.1E-11	7.6E-11	9.5E-11	1.4E-10	1.3E-10
NNW	1.0E-10	1.1E-10	6.8E-11	8.6E-11	1.1E-10	1.5E-10	1.4E-10
NW	8.8E-11	9.1E-11	6.3E-11	7.6E-11	9.2E-11	1.2E-10	1.2E-10
WNW	1.5E-10	1.6E-10	1.1E-10	1.3E-10	1.6E-10	2.2E-10	2.1E-10
W	2.7E-10	2.8E-10	1.7E-10	2.2E-10	2.8E-10	4.3E-10	4.0E-10
WSW	1.6E-10	1.6E-10	9.6E-11	1.3E-10	1.7E-10	2.6E-10	2.4E-10
SW	8.6E-11	9.0E-11	5.5E-11	7.0E-11	9.1E-11	1.4E-10	1.3E-10
SSW	8.9E-11	9.2E-11	5.9E-11	7.4E-11	9.3E-11	1.4E-10	1.3E-10
S	1.0E-10	1.1E-10	8.0E-11	9.4E-11	1.1E-10	1.2E-10	1.2E-10
SSE	1.9E-10	1.9E-10	1.4E-10	1.6E-10	1.9E-10	2.7E-10	2.6E-10
SE	2.2E-10	2.3E-10	1.6E-10	1.9E-10	2.3E-10	3.4E-10	3.2E-10
ESE	2.6E-10	2.7E-10	1.8E-10	2.2E-10	2.7E-10	3.9E-10	3.7E-10
E	3.0E-10	3.1E-10	2.1E-10	2.6E-10	3.1E-10	4.3E-10	4.1E-10
ENE	3.7E-10	3.8E-10	2.5E-10	3.1E-10	3.9E-10	5.5E-10	5.2E-10
NE	2.7E-10	2.8E-10	1.7E-10	2.2E-10	2.8E-10	4.3E-10	4.0E-10
NNE	1.7E-10	1.8E-10	1.2E-10	1.5E-10	1.8E-10	2.6E-10	2.4E-10

Direction	Distance (m) 1035	1068	1204	1199	1207	1133	1135
N	1.2E-10	1.2E-10	1.0E-10	1.0E-10	1.0E-10	1.1E-10	1.1E-10
NNW	1.4E-10	1.3E-10	1.2E-10	1.2E-10	1.2E-10	1.2E-10	1.2E-10
NW	1.1E-10	1.1E-10	9.8E-11	9.9E-11	9.8E-11	1.0E-10	1.0E-10
WNW	2.0E-10	1.9E-10	1.7E-10	1.7E-10	1.7E-10	1.8E-10	1.8E-10
W	3.7E-10	3.6E-10	3.1E-10	3.1E-10	3.1E-10	3.4E-10	3.4E-10
WSW	2.2E-10	2.1E-10	1.8E-10	1.8E-10	1.8E-10	2.0E-10	2.0E-10
SW	1.2E-10	1.2E-10	1.0E-10	1.0E-10	1.0E-10	1.1E-10	1.1E-10
SSW	1.2E-10	1.2E-10	1.0E-10	1.0E-10	1.0E-10	1.1E-10	1.1E-10
S	1.2E-10	1.2E-10	1.1E-10	1.1E-10	1.1E-10	1.1E-10	1.1E-10
SSE	2.4E-10	2.4E-10	2.1E-10	2.1E-10	2.1E-10	2.2E-10	2.2E-10
SE	3.0E-10	2.9E-10	2.5E-10	2.5E-10	2.5E-10	2.7E-10	2.7E-10
ESE	3.5E-10	3.4E-10	2.9E-10	3.0E-10	2.9E-10	3.1E-10	3.1E-10
E	3.9E-10	3.8E-10	3.4E-10	3.4E-10	3.4E-10	3.6E-10	3.6E-10
ENE	4.9E-10	4.7E-10	4.2E-10	4.2E-10	4.2E-10	4.5E-10	4.4E-10
NE	3.7E-10	3.6E-10	3.1E-10	3.1E-10	3.1E-10	3.3E-10	3.3E-10
NNE	2.3E-10	2.2E-10	2.0E-10	2.0E-10	2.0E-10	2.1E-10	2.1E-10

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

	Distance (m)					
Direction	1763	1317	1182	1186	1811	1796
N	7.0E-11	9.4E-11	1.1E-10	1.1E-10	6.8E-11	6.8E-11
NNW	7.8E-11	1.1E-10	1.2E-10	1.2E-10	7.6E-11	7.6E-11
NW	7.1E-11	9.1E-11	1.0E-10	9.9E-11	6.9E-11	7.0E-11
WNW	1.2E-10	1.6E-10	1.7E-10	1.7E-10	1.2E-10	1.2E-10
W	2.0E-10	2.8E-10	3.2E-10	3.2E-10	1.9E-10	1.9E-10
WSW	1.1E-10	1.6E-10	1.9E-10	1.9E-10	1.1E-10	1.1E-10
SW	6.3E-11	9.0E-11	1.0E-10	1.0E-10	6.1E-11	6.2E-11
SSW	6.8E-11	9.2E-11	1.0E-10	1.0E-10	6.6E-11	6.6E-11
S	8.8E-11	1.1E-10	1.1E-10	1.1E-10	8.7E-11	8.7E-11
SSE	1.5E-10	1.9E-10	2.1E-10	2.1E-10	1.5E-10	1.5E-10
SE	1.8E-10	2.3E-10	2.6E-10	2.6E-10	1.8E-10	1.8E-10
ESE	2.0E-10	2.7E-10	3.0E-10	3.0E-10	2.0E-10	2.0E-10
E	2.4E-10	3.1E-10	3.5E-10	3.4E-10	2.3E-10	2.3E-10
ENE	2.8E-10	3.8E-10	4.3E-10	4.2E-10	2.8E-10	2.8E-10
NE	1.9E-10	2.8E-10	3.2E-10	3.2E-10	1.9E-10	1.9E-10
NNE	1.3E-10	1.8E-10	2.0E-10	2.0E-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
Jun 5, 1995 10:42 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

2.93E-05

At This Location: 1374 Meters East Northeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Building 15, MEPA/HEPA Exhaust (Z004)

Dataset Name: 94-15HEPA-(I)-G2
Dataset Date: Jun 5, 1995 10:32 am
Wind File: WNDFILES\WIND94.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 1374 Meters East Northeast
Lifetime Fatal Cancer Risk: 3.65E-10

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	7.22E-08
BREAST	8.06E-08
R MAR	5.21E-06
LUNGS	2.18E-04
THYROID	7.08E-08
ENDOST	6.64E-05
RMNDR	1.55E-06
EFFEC	2.93E-05

RADIONUCLIDE EMISSIONS DURING THE YEAR 1994

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	0.30	7.1E-08	7.1E-08
U-235	Y	1.00	6.0E-09	6.0E-09
U-236	Y	1.00	6.0E-09	6.0E-09
U-238	Y	0.30	1.8E-07	1.8E-07
TH-228	Y	0.30	9.3E-09	9.3E-09
TH-230	Y	0.30	1.3E-08	1.3E-08
TH-232	Y	0.30	1.0E-08	1.0E-08

SITE INFORMATION

Temperature:	12 degrees C
Precipitation:	98 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

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
Jun 5, 1995 10:42 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Building 15, MEPA/HEPA Exhaust (Z004)

Dataset Name: 94-15HEPA-(I)-G2
Dataset Date: Jun 5, 1995 10:32 am
Wind File: WNDFILES\WIND94.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	7.22E-08
BREAST	8.06E-08
R MAR	5.21E-06
LUNGS	2.18E-04
THYROID	7.08E-08
ENDOST	6.64E-05
RMNDR	1.55E-06
EFFEC	2.93E-05

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	1.12E-06
INHALATION	2.82E-05
AIR IMMERSION	2.37E-13
GROUND SURFACE	1.12E-08
INTERNAL	2.93E-05
EXTERNAL	1.12E-08
TOTAL	2.93E-05

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	6.84E-06
U-235	3.26E-07
U-236	3.23E-07
U-238	1.54E-05
TH-228	1.64E-06
TH-230	2.23E-06
TH-232	2.50E-06
TOTAL	2.93E-05

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	4.85E-12
BONE	3.14E-12
THYROID	1.51E-14
BREAST	1.64E-13
LUNG	3.53E-10
STOMACH	1.03E-13
BOWEL	1.47E-13
LIVER	2.06E-13
PANCREAS	6.83E-14
URINARY	3.25E-12
OTHER	8.35E-14
TOTAL	3.65E-10

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	5.94E-12
INHALATION	3.59E-10
AIR IMMERSION	5.50E-18
GROUND SURFACE	2.56E-13
INTERNAL	3.65E-10
EXTERNAL	2.56E-13
TOTAL	3.65E-10

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	8.87E-11
U-235	4.25E-12
U-236	4.11E-12
U-238	2.02E-10
TH-228	3.32E-11
TH-230	1.87E-11
TH-232	1.42E-11
TOTAL	3.65E-10

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

	Distance (m)						
Direction	1374	1643	2013	1916	2622	2247	2239
N	7.3E-06	6.0E-06	4.9E-06	5.2E-06	3.8E-06	4.4E-06	4.5E-06
NNW	8.2E-06	6.8E-06	5.5E-06	5.8E-06	4.1E-06	4.9E-06	4.9E-06
NW	7.1E-06	6.1E-06	5.1E-06	5.3E-06	4.0E-06	4.6E-06	4.7E-06
WNW	1.2E-05	1.0E-05	8.5E-06	8.9E-06	6.8E-06	7.8E-06	7.8E-06
W	2.1E-05	1.7E-05	1.3E-05	1.4E-05	9.8E-06	1.2E-05	1.2E-05
WSW	1.2E-05	9.9E-06	7.7E-06	8.2E-06	5.6E-06	6.8E-06	6.8E-06
SW	6.9E-06	5.6E-06	4.4E-06	4.7E-06	3.3E-06	3.9E-06	3.9E-06
SSW	7.1E-06	5.9E-06	4.8E-06	5.0E-06	3.8E-06	4.3E-06	4.4E-06
S	8.4E-06	7.5E-06	6.5E-06	6.7E-06	5.1E-06	5.9E-06	5.9E-06
SSE	1.5E-05	1.3E-05	1.1E-05	1.2E-05	9.8E-06	1.1E-05	1.1E-05
SE	1.8E-05	1.5E-05	1.3E-05	1.4E-05	1.1E-05	1.2E-05	1.2E-05
ESE	2.1E-05	1.7E-05	1.4E-05	1.5E-05	1.2E-05	1.3E-05	1.3E-05
E	2.4E-05	2.0E-05	1.7E-05	1.8E-05	1.3E-05	1.5E-05	1.5E-05
ENE	2.9E-05	2.4E-05	2.0E-05	2.1E-05	1.5E-05	1.8E-05	1.8E-05
NE	2.1E-05	1.7E-05	1.3E-05	1.4E-05	9.8E-06	1.2E-05	1.2E-05
NNE	1.4E-05	1.1E-05	9.3E-06	9.8E-06	7.1E-06	8.3E-06	8.4E-06

	Distance (m)						
Direction	1735	1411	2347	2415	1802	2307	1654
N	5.7E-06	7.1E-06	4.3E-06	4.1E-06	5.5E-06	4.3E-06	6.0E-06
NNW	6.4E-06	8.0E-06	4.6E-06	4.5E-06	6.2E-06	4.7E-06	6.7E-06
NW	5.8E-06	6.9E-06	4.5E-06	4.4E-06	5.6E-06	4.5E-06	6.1E-06
WNW	9.7E-06	1.2E-05	7.5E-06	7.3E-06	9.4E-06	7.6E-06	1.0E-05
W	1.6E-05	2.1E-05	1.1E-05	1.1E-05	1.5E-05	1.1E-05	1.7E-05
WSW	9.3E-06	1.2E-05	6.4E-06	6.2E-06	8.8E-06	6.5E-06	9.8E-06
SW	5.2E-06	6.7E-06	3.7E-06	3.6E-06	5.0E-06	3.8E-06	5.5E-06
SSW	5.6E-06	6.9E-06	4.2E-06	4.1E-06	5.4E-06	4.2E-06	5.8E-06
S	7.2E-06	8.2E-06	5.7E-06	5.6E-06	7.1E-06	5.8E-06	7.5E-06
SSE	1.2E-05	1.5E-05	1.0E-05	1.0E-05	1.2E-05	1.1E-05	1.3E-05
SE	1.5E-05	1.7E-05	1.2E-05	1.2E-05	1.4E-05	1.2E-05	1.5E-05
ESE	1.6E-05	2.0E-05	1.3E-05	1.2E-05	1.6E-05	1.3E-05	1.7E-05
E	1.9E-05	2.3E-05	1.5E-05	1.4E-05	1.9E-05	1.5E-05	2.0E-05
ENE	2.3E-05	2.9E-05	1.7E-05	1.7E-05	2.2E-05	1.7E-05	2.4E-05
NE	1.6E-05	2.0E-05	1.1E-05	1.1E-05	1.5E-05	1.1E-05	1.7E-05
NNE	1.1E-05	1.3E-05	8.0E-06	7.7E-06	1.0E-05	8.1E-06	1.1E-05

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

	Distance (m)					
Direction	1993	2083	2035	1766	1798	1913
N	5.0E-06	4.8E-06	4.9E-06	5.6E-06	5.5E-06	5.2E-06
NNW	5.5E-06	5.3E-06	5.4E-06	6.3E-06	6.2E-06	5.8E-06
NW	5.1E-06	5.0E-06	5.1E-06	5.7E-06	5.6E-06	5.3E-06
WNW	8.6E-06	8.3E-06	8.4E-06	9.6E-06	9.4E-06	8.9E-06
W	1.4E-05	1.3E-05	1.3E-05	1.6E-05	1.5E-05	1.4E-05
WSW	7.8E-06	7.4E-06	7.6E-06	9.1E-06	8.9E-06	8.2E-06
SW	4.5E-06	4.3E-06	4.4E-06	5.1E-06	5.0E-06	4.7E-06
SSW	4.9E-06	4.7E-06	4.8E-06	5.5E-06	5.4E-06	5.1E-06
S	6.5E-06	6.3E-06	6.4E-06	7.2E-06	7.1E-06	6.8E-06
SSE	1.1E-05	1.1E-05	1.1E-05	1.2E-05	1.2E-05	1.2E-05
SE	1.3E-05	1.3E-05	1.3E-05	1.4E-05	1.4E-05	1.4E-05
ESE	1.4E-05	1.4E-05	1.4E-05	1.6E-05	1.6E-05	1.5E-05
E	1.7E-05	1.6E-05	1.7E-05	1.9E-05	1.9E-05	1.8E-05
ENE	2.0E-05	1.9E-05	2.0E-05	2.3E-05	2.2E-05	2.1E-05
NE	1.4E-05	1.3E-05	1.3E-05	1.6E-05	1.5E-05	1.4E-05
NNE	9.4E-06	9.0E-06	9.2E-06	1.1E-05	1.0E-05	9.8E-06

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

	Distance (m)						
Direction	1374	1643	2013	1916	2622	2247	2239
N	9.0E-11	7.4E-11	6.0E-11	6.4E-11	4.7E-11	5.4E-11	5.4E-11
NNW	1.0E-10	8.4E-11	6.7E-11	7.1E-11	5.0E-11	6.0E-11	6.0E-11
NW	8.7E-11	7.5E-11	6.2E-11	6.5E-11	4.9E-11	5.7E-11	5.7E-11
WNW	1.5E-10	1.3E-10	1.1E-10	1.1E-10	8.4E-11	9.6E-11	9.6E-11
W	2.7E-10	2.1E-10	1.7E-10	1.8E-10	1.2E-10	1.5E-10	1.5E-10
WSW	1.5E-10	1.2E-10	9.5E-11	1.0E-10	6.9E-11	8.3E-11	8.4E-11
SW	8.5E-11	6.8E-11	5.4E-11	5.7E-11	4.0E-11	4.8E-11	4.8E-11
SSW	8.7E-11	7.2E-11	5.9E-11	6.2E-11	4.6E-11	5.3E-11	5.3E-11
S	1.0E-10	9.2E-11	8.0E-11	8.3E-11	6.3E-11	7.3E-11	7.3E-11
SSE	1.8E-10	1.6E-10	1.4E-10	1.4E-10	1.2E-10	1.3E-10	1.3E-10
SE	2.2E-10	1.9E-10	1.6E-10	1.7E-10	1.4E-10	1.5E-10	1.5E-10
ESE	2.5E-10	2.1E-10	1.8E-10	1.9E-10	1.4E-10	1.6E-10	1.6E-10
E	3.0E-10	2.5E-10	2.1E-10	2.2E-10	1.7E-10	1.9E-10	1.9E-10
ENE	3.6E-10	3.0E-10	2.5E-10	2.6E-10	1.9E-10	2.2E-10	2.2E-10
NE	2.6E-10	2.1E-10	1.7E-10	1.8E-10	1.2E-10	1.5E-10	1.5E-10
NNE	1.7E-10	1.4E-10	1.2E-10	1.2E-10	8.7E-11	1.0E-10	1.0E-10

	Distance (m)						
Direction	1735	1411	2347	2415	1802	2307	1654
N	7.0E-11	8.7E-11	5.2E-11	5.1E-11	6.8E-11	5.3E-11	7.4E-11
NNW	7.9E-11	9.9E-11	5.7E-11	5.5E-11	7.6E-11	5.8E-11	8.3E-11
NW	7.1E-11	8.5E-11	5.4E-11	5.3E-11	6.9E-11	5.5E-11	7.4E-11
WNW	1.2E-10	1.5E-10	9.2E-11	9.0E-11	1.2E-10	9.3E-11	1.3E-10
W	2.0E-10	2.6E-10	1.4E-10	1.3E-10	1.9E-10	1.4E-10	2.1E-10
WSW	1.1E-10	1.5E-10	7.9E-11	7.6E-11	1.1E-10	8.1E-11	1.2E-10
SW	6.4E-11	8.2E-11	4.6E-11	4.4E-11	6.1E-11	4.6E-11	6.8E-11
SSW	6.8E-11	8.5E-11	5.1E-11	5.0E-11	6.6E-11	5.2E-11	7.2E-11
S	8.9E-11	1.0E-10	7.0E-11	6.8E-11	8.7E-11	7.1E-11	9.2E-11
SSE	1.5E-10	1.8E-10	1.3E-10	1.3E-10	1.5E-10	1.3E-10	1.6E-10
SE	1.8E-10	2.2E-10	1.5E-10	1.4E-10	1.8E-10	1.5E-10	1.9E-10
ESE	2.0E-10	2.5E-10	1.6E-10	1.5E-10	2.0E-10	1.6E-10	2.1E-10
E	2.4E-10	2.9E-10	1.8E-10	1.8E-10	2.3E-10	1.9E-10	2.5E-10
ENE	2.9E-10	3.6E-10	2.1E-10	2.1E-10	2.8E-10	2.2E-10	3.0E-10
NE	2.0E-10	2.5E-10	1.4E-10	1.3E-10	1.9E-10	1.4E-10	2.1E-10
NNE	1.3E-10	1.7E-10	9.8E-11	9.5E-11	1.3E-10	1.0E-10	1.4E-10

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

	Distance (m)					
Direction	1993	2083	2035	1766	1798	1913
N	6.1E-11	5.8E-11	6.0E-11	6.9E-11	6.8E-11	6.4E-11
NNW	6.8E-11	6.5E-11	6.6E-11	7.7E-11	7.6E-11	7.1E-11
NW	6.3E-11	6.1E-11	6.2E-11	7.0E-11	6.9E-11	6.5E-11
WNW	1.1E-10	1.0E-10	1.0E-10	1.2E-10	1.2E-10	1.1E-10
W	1.7E-10	1.6E-10	1.7E-10	2.0E-10	1.9E-10	1.8E-10
WSW	9.6E-11	9.1E-11	9.4E-11	1.1E-10	1.1E-10	1.0E-10
SW	5.5E-11	5.2E-11	5.3E-11	6.3E-11	6.1E-11	5.7E-11
SSW	5.9E-11	5.7E-11	5.8E-11	6.7E-11	6.6E-11	6.2E-11
S	8.0E-11	7.7E-11	7.9E-11	8.8E-11	8.7E-11	8.3E-11
SSE	1.4E-10	1.4E-10	1.4E-10	1.5E-10	1.5E-10	1.4E-10
SE	1.6E-10	1.6E-10	1.6E-10	1.8E-10	1.8E-10	1.7E-10
ESE	1.8E-10	1.7E-10	1.8E-10	2.0E-10	2.0E-10	1.9E-10
E	2.1E-10	2.0E-10	2.1E-10	2.4E-10	2.3E-10	2.2E-10
ENE	2.5E-10	2.4E-10	2.5E-10	2.8E-10	2.8E-10	2.6E-10
NE	1.7E-10	1.6E-10	1.6E-10	1.9E-10	1.9E-10	1.8E-10
NNE	1.2E-10	1.1E-10	1.1E-10	1.3E-10	1.3E-10	1.2E-10

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

	Distance (m)					
Direction	1993	2083	2035	1766	1798	1913
N	5.3E-08	4.9E-08	5.1E-08	6.4E-08	6.2E-08	5.6E-08
NNW	5.5E-08	5.1E-08	5.3E-08	6.7E-08	6.5E-08	5.8E-08
NW	6.1E-08	5.7E-08	5.9E-08	7.5E-08	7.3E-08	6.6E-08
WNW	1.1E-07	1.0E-07	1.0E-07	1.3E-07	1.3E-07	1.2E-07
W	1.1E-07	1.0E-07	1.1E-07	1.3E-07	1.3E-07	1.2E-07
WSW	7.2E-08	6.7E-08	7.0E-08	8.8E-08	8.6E-08	7.8E-08
SW	4.8E-08	4.5E-08	4.6E-08	5.8E-08	5.7E-08	5.1E-08
SSW	6.0E-08	5.6E-08	5.8E-08	7.3E-08	7.1E-08	6.4E-08
S	1.7E-07	1.6E-07	1.7E-07	1.9E-07	1.9E-07	1.8E-07
SSE	2.0E-07	1.9E-07	2.0E-07	2.5E-07	2.4E-07	2.2E-07
SE	2.2E-07	2.0E-07	2.1E-07	2.6E-07	2.6E-07	2.3E-07
ESE	2.0E-07	1.8E-07	1.9E-07	2.4E-07	2.3E-07	2.1E-07
E	2.1E-07	1.9E-07	2.0E-07	2.6E-07	2.5E-07	2.2E-07
ENE	2.0E-07	1.9E-07	2.0E-07	2.5E-07	2.4E-07	2.2E-07
NE	1.2E-07	1.1E-07	1.2E-07	1.5E-07	1.5E-07	1.3E-07
NNE	8.6E-08	8.0E-08	8.3E-08	1.1E-07	1.0E-07	9.2E-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
Jun 12, 1995 7:51 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

5.60E-02

At This Location: 921 Meters Southeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Building 15, Perchloric Stacks (Z003)

Dataset Name: 94-15PERC-(I)-G1
Dataset Date: Jun 12, 1995 7:47 am
Wind File: WNDFILES\WIND94.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 921 Meters Southeast
Lifetime Fatal Cancer Risk: 7.13E-07

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	1.65E-04
BREAST	1.87E-04
R MAR	7.50E-03
LUNGS	4.23E-01
THYROID	1.61E-04
ENDOST	9.90E-02
RMNDR	4.25E-03
EFFEC	5.60E-02

RADIONUCLIDE EMISSIONS DURING THE YEAR 1994

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: 12 degrees C
Precipitation: 98 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

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

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
Jun 12, 1995 7:51 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Building 15, Perchloric Stacks (Z003)

Dataset Name: 94-15PERC-(I)-G1
Dataset Date: Jun 12, 1995 7:47 am
Wind File: WNDFILES\WIND94.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	1.65E-04
BREAST	1.87E-04
R MAR	7.50E-03
LUNGS	4.23E-01
THYROID	1.61E-04
ENDOST	9.90E-02
RMNDR	4.25E-03
EFFEC	5.60E-02

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	3.05E-03
INHALATION	5.29E-02
AIR IMMERSION	4.44E-09
GROUND SURFACE	3.18E-05
INTERNAL	5.60E-02
EXTERNAL	3.18E-05
TOTAL	5.60E-02

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	2.42E-02
U-235	1.21E-03
U-236	8.89E-04
U-238	2.41E-02
RA-226	2.30E-06
RA-228	3.69E-06
TH-228	1.33E-03
TH-230	3.90E-03
TH-232	2.98E-04
TH-234	6.20E-05
TOTAL	5.60E-02

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	7.33E-09
BONE	4.85E-09
THYROID	3.67E-11
BREAST	4.13E-10
LUNG	6.90E-07
STOMACH	2.78E-10
BOWEL	7.41E-10
LIVER	3.42E-10
PANCREAS	1.62E-10
URINARY	8.84E-09
OTHER	1.98E-10
TOTAL	7.13E-07

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	1.62E-08
INHALATION	6.96E-07
AIR IMMERSION	9.89E-14
GROUND SURFACE	7.32E-10
INTERNAL	7.12E-07
EXTERNAL	7.32E-10
TOTAL	7.13E-07

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	3.11E-07
U-235	1.59E-08
U-236	1.14E-08
U-238	3.12E-07
RA-226	3.07E-11
RA-228	3.78E-11
TH-228	2.66E-08
TH-230	3.20E-08
TH-232	1.68E-09
TH-234	1.99E-09
TOTAL	7.13E-07

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

Direction	Distance (m) 1363	1317	2008	1617	1305	921	979
N	7.9E-03	8.3E-03	4.4E-03	6.1E-03	8.5E-03	1.4E-02	1.3E-02
NNW	8.2E-03	8.7E-03	4.6E-03	6.4E-03	8.8E-03	1.5E-02	1.4E-02
NW	9.2E-03	9.7E-03	5.1E-03	7.1E-03	9.8E-03	1.7E-02	1.5E-02
WNW	1.6E-02	1.7E-02	8.7E-03	1.2E-02	1.7E-02	2.9E-02	2.6E-02
W	1.6E-02	1.7E-02	8.9E-03	1.3E-02	1.8E-02	3.0E-02	2.7E-02
WSW	1.1E-02	1.1E-02	6.0E-03	8.3E-03	1.2E-02	2.0E-02	1.8E-02
SW	7.2E-03	7.6E-03	4.1E-03	5.6E-03	7.7E-03	1.3E-02	1.2E-02
SSW	8.9E-03	9.4E-03	5.0E-03	6.9E-03	9.5E-03	1.6E-02	1.4E-02
S	1.9E-02	2.0E-02	1.4E-02	1.7E-02	2.0E-02	2.4E-02	2.3E-02
SSE	2.9E-02	3.1E-02	1.6E-02	2.3E-02	3.1E-02	5.2E-02	4.8E-02
SE	3.1E-02	3.3E-02	1.7E-02	2.4E-02	3.4E-02	5.6E-02	5.1E-02
ESE	2.9E-02	3.0E-02	1.6E-02	2.2E-02	3.1E-02	5.2E-02	4.7E-02
E	3.1E-02	3.2E-02	1.7E-02	2.3E-02	3.3E-02	5.6E-02	5.1E-02
ENE	3.0E-02	3.2E-02	1.6E-02	2.3E-02	3.2E-02	5.5E-02	5.0E-02
NE	1.8E-02	1.9E-02	9.9E-03	1.4E-02	2.0E-02	3.4E-02	3.0E-02
NNE	1.3E-02	1.4E-02	7.0E-03	9.9E-03	1.4E-02	2.4E-02	2.1E-02

Direction	Distance (m) 1035	1068	1204	1199	1207	1133	1135
N	1.2E-02	1.1E-02	9.5E-03	9.6E-03	9.5E-03	1.0E-02	1.0E-02
NNW	1.2E-02	1.2E-02	9.9E-03	1.0E-02	9.9E-03	1.1E-02	1.1E-02
NW	1.4E-02	1.3E-02	1.1E-02	1.1E-02	1.1E-02	1.2E-02	1.2E-02
WNW	2.4E-02	2.3E-02	1.9E-02	1.9E-02	1.9E-02	2.1E-02	2.1E-02
W	2.5E-02	2.4E-02	2.0E-02	2.0E-02	2.0E-02	2.2E-02	2.2E-02
WSW	1.6E-02	1.6E-02	1.3E-02	1.3E-02	1.3E-02	1.4E-02	1.4E-02
SW	1.1E-02	1.0E-02	8.7E-03	8.7E-03	8.6E-03	9.5E-03	9.5E-03
SSW	1.3E-02	1.3E-02	1.1E-02	1.1E-02	1.1E-02	1.2E-02	1.2E-02
S	2.3E-02	2.2E-02	2.1E-02	2.1E-02	2.1E-02	2.2E-02	2.2E-02
SSE	4.4E-02	4.2E-02	3.5E-02	3.6E-02	3.5E-02	3.9E-02	3.9E-02
SE	4.7E-02	4.5E-02	3.8E-02	3.8E-02	3.8E-02	4.1E-02	4.1E-02
ESE	4.4E-02	4.2E-02	3.5E-02	3.5E-02	3.5E-02	3.8E-02	3.8E-02
E	4.7E-02	4.4E-02	3.7E-02	3.7E-02	3.7E-02	4.1E-02	4.1E-02
ENE	4.6E-02	4.4E-02	3.7E-02	3.7E-02	3.6E-02	4.0E-02	4.0E-02
NE	2.8E-02	2.7E-02	2.2E-02	2.2E-02	2.2E-02	2.4E-02	2.4E-02
NNE	2.0E-02	1.9E-02	1.6E-02	1.6E-02	1.6E-02	1.7E-02	1.7E-02

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

	Distance (m)					
Direction	1763	1317	1182	1186	1811	1796
N	5.4E-03	8.3E-03	9.8E-03	9.8E-03	5.2E-03	5.2E-03
NNW	5.6E-03	8.7E-03	1.0E-02	1.0E-02	5.4E-03	5.4E-03
NW	6.2E-03	9.7E-03	1.1E-02	1.1E-02	6.0E-03	6.0E-03
WNW	1.1E-02	1.7E-02	2.0E-02	2.0E-02	1.0E-02	1.0E-02
W	1.1E-02	1.7E-02	2.1E-02	2.0E-02	1.0E-02	1.1E-02
WSW	7.3E-03	1.1E-02	1.3E-02	1.3E-02	7.0E-03	7.1E-03
SW	4.9E-03	7.6E-03	8.9E-03	8.9E-03	4.7E-03	4.8E-03
SSW	6.0E-03	9.4E-03	1.1E-02	1.1E-02	5.8E-03	5.9E-03
S	1.6E-02	2.0E-02	2.1E-02	2.1E-02	1.5E-02	1.5E-02
SSE	2.0E-02	3.1E-02	3.6E-02	3.6E-02	1.9E-02	1.9E-02
SE	2.1E-02	3.3E-02	3.9E-02	3.9E-02	2.0E-02	2.0E-02
ESE	1.9E-02	3.0E-02	3.6E-02	3.6E-02	1.8E-02	1.9E-02
E	2.0E-02	3.2E-02	3.8E-02	3.8E-02	2.0E-02	2.0E-02
ENE	2.0E-02	3.2E-02	3.8E-02	3.7E-02	1.9E-02	1.9E-02
NE	1.2E-02	1.9E-02	2.3E-02	2.3E-02	1.2E-02	1.2E-02
NNE	8.6E-03	1.4E-02	1.6E-02	1.6E-02	8.3E-03	8.4E-03

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

	Distance (m)						
Direction	1363	1317	2008	1617	1305	921	979
N	9.8E-08	1.0E-07	5.3E-08	7.5E-08	1.0E-07	1.8E-07	1.6E-07
NNW	1.0E-07	1.1E-07	5.5E-08	7.8E-08	1.1E-07	1.9E-07	1.7E-07
NW	1.1E-07	1.2E-07	6.2E-08	8.7E-08	1.2E-07	2.1E-07	1.9E-07
WNW	2.0E-07	2.1E-07	1.1E-07	1.5E-07	2.1E-07	3.6E-07	3.3E-07
W	2.1E-07	2.2E-07	1.1E-07	1.6E-07	2.2E-07	3.9E-07	3.5E-07
WSW	1.4E-07	1.4E-07	7.3E-08	1.0E-07	1.4E-07	2.5E-07	2.3E-07
SW	8.9E-08	9.4E-08	4.8E-08	6.8E-08	9.5E-08	1.6E-07	1.5E-07
SSW	1.1E-07	1.2E-07	6.0E-08	8.5E-08	1.2E-07	2.0E-07	1.8E-07
S	2.4E-07	2.5E-07	1.7E-07	2.1E-07	2.5E-07	3.0E-07	2.9E-07
SSE	3.7E-07	3.9E-07	2.0E-07	2.9E-07	4.0E-07	6.7E-07	6.1E-07
SE	4.0E-07	4.2E-07	2.1E-07	3.0E-07	4.3E-07	7.1E-07	6.5E-07
ESE	3.7E-07	3.9E-07	2.0E-07	2.8E-07	3.9E-07	6.6E-07	6.0E-07
E	3.9E-07	4.1E-07	2.1E-07	3.0E-07	4.2E-07	7.1E-07	6.4E-07
ENE	3.8E-07	4.0E-07	2.0E-07	2.9E-07	4.1E-07	7.0E-07	6.4E-07
NE	2.3E-07	2.4E-07	1.2E-07	1.7E-07	2.5E-07	4.3E-07	3.9E-07
NNE	1.6E-07	1.7E-07	8.6E-08	1.2E-07	1.7E-07	3.0E-07	2.7E-07

	Distance (m)						
Direction	1035	1068	1204	1199	1207	1133	1135
N	1.5E-07	1.4E-07	1.2E-07	1.2E-07	1.2E-07	1.3E-07	1.3E-07
NNW	1.6E-07	1.5E-07	1.2E-07	1.2E-07	1.2E-07	1.4E-07	1.4E-07
NW	1.7E-07	1.7E-07	1.4E-07	1.4E-07	1.4E-07	1.5E-07	1.5E-07
WNW	3.0E-07	2.9E-07	2.4E-07	2.4E-07	2.4E-07	2.7E-07	2.6E-07
W	3.2E-07	3.0E-07	2.5E-07	2.5E-07	2.5E-07	2.8E-07	2.8E-07
WSW	2.1E-07	2.0E-07	1.6E-07	1.6E-07	1.6E-07	1.8E-07	1.8E-07
SW	1.3E-07	1.3E-07	1.1E-07	1.1E-07	1.1E-07	1.2E-07	1.2E-07
SSW	1.7E-07	1.6E-07	1.3E-07	1.3E-07	1.3E-07	1.5E-07	1.5E-07
S	2.9E-07	2.8E-07	2.6E-07	2.6E-07	2.6E-07	2.7E-07	2.7E-07
SSE	5.6E-07	5.4E-07	4.5E-07	4.5E-07	4.5E-07	4.9E-07	4.9E-07
SE	6.0E-07	5.7E-07	4.8E-07	4.8E-07	4.8E-07	5.3E-07	5.2E-07
ESE	5.5E-07	5.3E-07	4.4E-07	4.4E-07	4.4E-07	4.8E-07	4.8E-07
E	5.9E-07	5.7E-07	4.7E-07	4.7E-07	4.7E-07	5.2E-07	5.2E-07
ENE	5.8E-07	5.6E-07	4.6E-07	4.7E-07	4.6E-07	5.1E-07	5.1E-07
NE	3.5E-07	3.4E-07	2.8E-07	2.8E-07	2.8E-07	3.1E-07	3.1E-07
NNE	2.5E-07	2.4E-07	2.0E-07	2.0E-07	2.0E-07	2.2E-07	2.1E-07

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

	Distance (m)					
Direction	1763	1317	1182	1186	1811	1796
N	6.5E-08	1.0E-07	1.2E-07	1.2E-07	6.3E-08	6.3E-08
NNW	6.8E-08	1.1E-07	1.3E-07	1.3E-07	6.5E-08	6.6E-08
NW	7.6E-08	1.2E-07	1.4E-07	1.4E-07	7.3E-08	7.4E-08
WNW	1.3E-07	2.1E-07	2.5E-07	2.5E-07	1.3E-07	1.3E-07
W	1.4E-07	2.2E-07	2.6E-07	2.6E-07	1.3E-07	1.3E-07
WSW	9.0E-08	1.4E-07	1.7E-07	1.7E-07	8.6E-08	8.7E-08
SW	6.0E-08	9.4E-08	1.1E-07	1.1E-07	5.7E-08	5.8E-08
SSW	7.4E-08	1.2E-07	1.4E-07	1.4E-07	7.1E-08	7.2E-08
S	2.0E-07	2.5E-07	2.7E-07	2.6E-07	1.9E-07	1.9E-07
SSE	2.5E-07	3.9E-07	4.6E-07	4.6E-07	2.4E-07	2.4E-07
SE	2.7E-07	4.2E-07	4.9E-07	4.9E-07	2.5E-07	2.6E-07
ESE	2.4E-07	3.9E-07	4.5E-07	4.5E-07	2.3E-07	2.4E-07
E	2.6E-07	4.1E-07	4.8E-07	4.8E-07	2.5E-07	2.5E-07
ENE	2.5E-07	4.0E-07	4.8E-07	4.7E-07	2.4E-07	2.4E-07
NE	1.5E-07	2.4E-07	2.9E-07	2.9E-07	1.5E-07	1.5E-07
NNE	1.1E-07	1.7E-07	2.0E-07	2.0E-07	1.0E-07	1.0E-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
Jun 12, 1995 7:52 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

3.08E-02

At This Location: 1374 Meters Southeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Building 15, Perchloric Stacks (Z003)

Dataset Name: 94-15PERC-(I)-G2
Dataset Date: Jun 12, 1995 7:47 am
Wind File: WNDFILES\WIND94.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 1374 Meters Southeast
Lifetime Fatal Cancer Risk: 3.92E-07

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	9.22E-05
BREAST	1.05E-04
R MAR	4.15E-03
LUNGS	2.32E-01
THYROID	8.98E-05
ENDOST	5.48E-02
RMNDR	2.38E-03
EFFEC	3.08E-02

RADIONUCLIDE EMISSIONS DURING THE YEAR 1994

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: 12 degrees C
Precipitation: 98 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
Jun 12, 1995 7:52 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Building 15, Perchloric Stacks (Z003)

Dataset Name: 94-15PERC-(I)-G2
Dataset Date: Jun 12, 1995 7:47 am
Wind File: WNDFILES\WIND94.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	9.22E-05
BREAST	1.05E-04
R MAR	4.15E-03
LUNGS	2.32E-01
THYROID	8.98E-05
ENDOST	5.48E-02
RMNDR	2.38E-03
EFFEC	3.08E-02

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	1.71E-03
INHALATION	2.91E-02
AIR IMMERSION	2.44E-09
GROUND SURFACE	1.79E-05
INTERNAL	3.08E-02
EXTERNAL	1.79E-05
TOTAL	3.08E-02

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	1.33E-02
U-235	6.68E-04
U-236	4.89E-04
U-238	1.32E-02
RA-226	1.28E-06
RA-228	2.05E-06
TH-228	7.29E-04
TH-230	2.14E-03
TH-232	1.64E-04
TH-234	3.44E-05
TOTAL	3.08E-02

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	4.06E-09
BONE	2.69E-09
THYROID	2.05E-11
BREAST	2.31E-10
LUNG	3.79E-07
STOMACH	1.55E-10
BOWEL	4.13E-10
LIVER	1.90E-10
PANCREAS	9.03E-11
URINARY	4.94E-09
OTHER	1.10E-10
TOTAL	3.92E-07

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	9.04E-09
INHALATION	3.83E-07
AIR IMMERSION	5.43E-14
GROUND SURFACE	4.11E-10
INTERNAL	3.92E-07
EXTERNAL	4.11E-10
TOTAL	3.92E-07

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	1.71E-07
U-235	8.76E-09
U-236	6.29E-09
U-238	1.72E-07
RA-226	1.70E-11
RA-228	2.10E-11
TH-228	1.46E-08
TH-230	1.76E-08
TH-232	9.24E-10
TH-234	1.09E-09
TOTAL	3.92E-07

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

	Distance (m)						
Direction	1374	1643	2013	1916	2622	2247	2239
N	7.6E-03	5.8E-03	4.2E-03	4.5E-03	2.8E-03	3.5E-03	3.6E-03
NNW	7.9E-03	6.0E-03	4.3E-03	4.7E-03	2.9E-03	3.7E-03	3.7E-03
NW	8.9E-03	6.7E-03	4.9E-03	5.3E-03	3.2E-03	4.1E-03	4.1E-03
WNW	1.6E-02	1.2E-02	8.4E-03	9.1E-03	5.5E-03	7.1E-03	7.1E-03
W	1.6E-02	1.2E-02	8.6E-03	9.4E-03	5.6E-03	7.2E-03	7.3E-03
WSW	1.1E-02	7.9E-03	5.7E-03	6.2E-03	3.8E-03	4.8E-03	4.8E-03
SW	6.9E-03	5.3E-03	3.8E-03	4.1E-03	2.6E-03	3.2E-03	3.3E-03
SSW	8.6E-03	6.5E-03	4.7E-03	5.1E-03	3.1E-03	4.0E-03	4.0E-03
S	1.9E-02	1.6E-02	1.3E-02	1.4E-02	9.9E-03	1.2E-02	1.2E-02
SSE	2.9E-02	2.2E-02	1.6E-02	1.7E-02	1.0E-02	1.3E-02	1.3E-02
SE	3.1E-02	2.3E-02	1.7E-02	1.8E-02	1.1E-02	1.4E-02	1.4E-02
ESE	2.8E-02	2.1E-02	1.5E-02	1.7E-02	1.0E-02	1.3E-02	1.3E-02
E	3.0E-02	2.3E-02	1.6E-02	1.8E-02	1.1E-02	1.4E-02	1.4E-02
ENE	3.0E-02	2.2E-02	1.6E-02	1.7E-02	1.0E-02	1.3E-02	1.3E-02
NE	1.8E-02	1.3E-02	9.6E-03	1.0E-02	6.3E-03	8.1E-03	8.1E-03
NNE	1.3E-02	9.4E-03	6.8E-03	7.4E-03	4.5E-03	5.7E-03	5.7E-03

	Distance (m)						
Direction	1735	1411	2347	2415	1802	2307	1654
N	5.3E-03	7.3E-03	3.3E-03	3.2E-03	5.0E-03	3.4E-03	5.7E-03
NNW	5.5E-03	7.6E-03	3.4E-03	3.3E-03	5.2E-03	3.5E-03	5.9E-03
NW	6.2E-03	8.5E-03	3.8E-03	3.7E-03	5.8E-03	3.9E-03	6.7E-03
WNW	1.1E-02	1.5E-02	6.6E-03	6.3E-03	1.0E-02	6.8E-03	1.2E-02
W	1.1E-02	1.5E-02	6.7E-03	6.4E-03	1.0E-02	6.9E-03	1.2E-02
WSW	7.3E-03	1.0E-02	4.5E-03	4.3E-03	6.8E-03	4.6E-03	7.8E-03
SW	4.8E-03	6.7E-03	3.0E-03	2.9E-03	4.6E-03	3.1E-03	5.2E-03
SSW	6.0E-03	8.3E-03	3.7E-03	3.6E-03	5.6E-03	3.8E-03	6.5E-03
S	1.6E-02	1.8E-02	1.1E-02	1.1E-02	1.5E-02	1.2E-02	1.6E-02
SSE	2.0E-02	2.8E-02	1.2E-02	1.2E-02	1.9E-02	1.3E-02	2.2E-02
SE	2.1E-02	3.0E-02	1.3E-02	1.2E-02	2.0E-02	1.3E-02	2.3E-02
ESE	2.0E-02	2.7E-02	1.2E-02	1.1E-02	1.8E-02	1.2E-02	2.1E-02
E	2.1E-02	2.9E-02	1.3E-02	1.2E-02	2.0E-02	1.3E-02	2.2E-02
ENE	2.0E-02	2.8E-02	1.2E-02	1.2E-02	1.9E-02	1.3E-02	2.2E-02
NE	1.2E-02	1.7E-02	7.5E-03	7.2E-03	1.2E-02	7.7E-03	1.3E-02
NNE	8.6E-03	1.2E-02	5.3E-03	5.1E-03	8.1E-03	5.5E-03	9.3E-03

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

	Distance (m)					
Direction	1993	2083	2035	1766	1798	1913
N	4.3E-03	4.0E-03	4.1E-03	5.2E-03	5.0E-03	4.5E-03
NNW	4.4E-03	4.1E-03	4.3E-03	5.4E-03	5.2E-03	4.7E-03
NW	4.9E-03	4.6E-03	4.8E-03	6.0E-03	5.8E-03	5.3E-03
WNW	8.6E-03	8.0E-03	8.3E-03	1.0E-02	1.0E-02	9.2E-03
W	8.8E-03	8.2E-03	8.5E-03	1.1E-02	1.0E-02	9.4E-03
WSW	5.8E-03	5.4E-03	5.6E-03	7.1E-03	6.9E-03	6.2E-03
SW	3.9E-03	3.6E-03	3.8E-03	4.7E-03	4.6E-03	4.2E-03
SSW	4.8E-03	4.5E-03	4.7E-03	5.8E-03	5.7E-03	5.1E-03
S	1.4E-02	1.3E-02	1.3E-02	1.5E-02	1.5E-02	1.4E-02
SSE	1.6E-02	1.5E-02	1.5E-02	1.9E-02	1.9E-02	1.7E-02
SE	1.7E-02	1.6E-02	1.6E-02	2.1E-02	2.0E-02	1.8E-02
ESE	1.6E-02	1.5E-02	1.5E-02	1.9E-02	1.8E-02	1.7E-02
E	1.7E-02	1.5E-02	1.6E-02	2.0E-02	2.0E-02	1.8E-02
ENE	1.6E-02	1.5E-02	1.6E-02	2.0E-02	1.9E-02	1.7E-02
NE	9.8E-03	9.1E-03	9.5E-03	1.2E-02	1.2E-02	1.0E-02
NNE	6.9E-03	6.4E-03	6.7E-03	8.4E-03	8.1E-03	7.4E-03

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

	Distance (m)						
Direction	1374	1643	2013	1916	2622	2247	2239
N	9.6E-08	7.2E-08	5.2E-08	5.6E-08	3.4E-08	4.3E-08	4.4E-08
NNW	1.0E-07	7.5E-08	5.4E-08	5.8E-08	3.5E-08	4.5E-08	4.5E-08
NW	1.1E-07	8.4E-08	6.0E-08	6.5E-08	3.9E-08	5.1E-08	5.1E-08
WNW	2.0E-07	1.5E-07	1.1E-07	1.1E-07	6.8E-08	8.8E-08	8.9E-08
W	2.0E-07	1.5E-07	1.1E-07	1.2E-07	7.0E-08	9.0E-08	9.1E-08
WSW	1.3E-07	9.9E-08	7.1E-08	7.7E-08	4.6E-08	6.0E-08	6.0E-08
SW	8.7E-08	6.5E-08	4.7E-08	5.1E-08	3.1E-08	4.0E-08	4.0E-08
SSW	1.1E-07	8.1E-08	5.9E-08	6.4E-08	3.8E-08	4.9E-08	4.9E-08
S	2.4E-07	2.1E-07	1.7E-07	1.8E-07	1.3E-07	1.5E-07	1.5E-07
SSE	3.7E-07	2.8E-07	2.0E-07	2.2E-07	1.3E-07	1.7E-07	1.7E-07
SE	3.9E-07	3.0E-07	2.1E-07	2.3E-07	1.4E-07	1.8E-07	1.8E-07
ESE	3.6E-07	2.7E-07	1.9E-07	2.1E-07	1.3E-07	1.6E-07	1.6E-07
E	3.8E-07	2.9E-07	2.1E-07	2.2E-07	1.3E-07	1.7E-07	1.7E-07
ENE	3.8E-07	2.8E-07	2.0E-07	2.2E-07	1.3E-07	1.7E-07	1.7E-07
NE	2.3E-07	1.7E-07	1.2E-07	1.3E-07	7.8E-08	1.0E-07	1.0E-07
NNE	1.6E-07	1.2E-07	8.5E-08	9.2E-08	5.5E-08	7.1E-08	7.1E-08

	Distance (m)						
Direction	1735	1411	2347	2415	1802	2307	1654
N	6.6E-08	9.2E-08	4.0E-08	3.9E-08	6.2E-08	4.2E-08	7.1E-08
NNW	6.9E-08	9.6E-08	4.2E-08	4.0E-08	6.4E-08	4.3E-08	7.4E-08
NW	7.7E-08	1.1E-07	4.7E-08	4.5E-08	7.2E-08	4.8E-08	8.3E-08
WNW	1.4E-07	1.9E-07	8.2E-08	7.9E-08	1.3E-07	8.5E-08	1.5E-07
W	1.4E-07	1.9E-07	8.4E-08	8.0E-08	1.3E-07	8.7E-08	1.5E-07
WSW	9.1E-08	1.3E-07	5.6E-08	5.3E-08	8.6E-08	5.7E-08	9.8E-08
SW	6.0E-08	8.3E-08	3.7E-08	3.5E-08	5.6E-08	3.8E-08	6.5E-08
SSW	7.5E-08	1.0E-07	4.6E-08	4.4E-08	7.0E-08	4.7E-08	8.1E-08
S	2.0E-07	2.3E-07	1.4E-07	1.4E-07	1.9E-07	1.5E-07	2.1E-07
SSE	2.5E-07	3.5E-07	1.6E-07	1.5E-07	2.4E-07	1.6E-07	2.7E-07
SE	2.7E-07	3.8E-07	1.7E-07	1.6E-07	2.5E-07	1.7E-07	2.9E-07
ESE	2.5E-07	3.4E-07	1.5E-07	1.4E-07	2.3E-07	1.6E-07	2.7E-07
E	2.6E-07	3.7E-07	1.6E-07	1.5E-07	2.5E-07	1.6E-07	2.8E-07
ENE	2.6E-07	3.6E-07	1.6E-07	1.5E-07	2.4E-07	1.6E-07	2.8E-07
NE	1.5E-07	2.2E-07	9.4E-08	9.0E-08	1.5E-07	9.7E-08	1.7E-07
NNE	1.1E-07	1.5E-07	6.6E-08	6.3E-08	1.0E-07	6.8E-08	1.2E-07

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

	Distance (m)					
Direction	1993	2083	2035	1766	1798	1913
N	5.3E-08	4.9E-08	5.1E-08	6.4E-08	6.2E-08	5.6E-08
NNW	5.5E-08	5.1E-08	5.3E-08	6.7E-08	6.5E-08	5.8E-08
NW	6.1E-08	5.7E-08	5.9E-08	7.5E-08	7.3E-08	6.6E-08
WNW	1.1E-07	1.0E-07	1.0E-07	1.3E-07	1.3E-07	1.2E-07
W	1.1E-07	1.0E-07	1.1E-07	1.3E-07	1.3E-07	1.2E-07
WSW	7.2E-08	6.7E-08	7.0E-08	8.8E-08	8.6E-08	7.8E-08
SW	4.8E-08	4.5E-08	4.6E-08	5.8E-08	5.7E-08	5.1E-08
SSW	6.0E-08	5.6E-08	5.8E-08	7.3E-08	7.1E-08	6.4E-08
S	1.7E-07	1.6E-07	1.7E-07	1.9E-07	1.9E-07	1.8E-07
SSE	2.0E-07	1.9E-07	2.0E-07	2.5E-07	2.4E-07	2.2E-07
SE	2.2E-07	2.0E-07	2.1E-07	2.6E-07	2.6E-07	2.3E-07
ESE	2.0E-07	1.8E-07	1.9E-07	2.4E-07	2.3E-07	2.1E-07
E	2.1E-07	1.9E-07	2.0E-07	2.6E-07	2.5E-07	2.2E-07
ENE	2.0E-07	1.9E-07	2.0E-07	2.5E-07	2.4E-07	2.2E-07
NE	1.2E-07	1.1E-07	1.2E-07	1.5E-07	1.5E-07	1.3E-07
NNE	8.6E-08	8.0E-08	8.3E-08	1.1E-07	1.0E-07	9.2E-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
May 1, 1995 12:49 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

1.31E-05

At This Location: 924 Meters West

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Cooling Tower

Dataset Name: 94-COOLWTR(I)-G1
Dataset Date: May 1, 1995 12:21 am
Wind File: WNDFILES\WIND94.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 924 Meters West
Lifetime Fatal Cancer Risk: 1.65E-10

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	7.32E-08
BREAST	8.30E-08
R MAR	1.75E-06
LUNGS	9.58E-05
THYROID	7.13E-08
ENDOST	2.44E-05
RMNDR	2.07E-06
EFFEC	1.31E-05

RADIONUCLIDE EMISSIONS DURING THE YEAR 1994

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	1.00	2.4E-07	2.4E-07
U-235	Y	1.00	1.3E-08	1.3E-08
U-236	Y	1.00	8.8E-09	8.8E-09
U-238	Y	1.00	3.2E-07	3.2E-07
RA-226	W	1.00	2.2E-10	2.2E-10
RA-228	W	1.00	8.7E-10	8.7E-10
TH-228	Y	1.00	9.1E-09	9.1E-09
TH-230	Y	1.00	6.4E-10	6.4E-10
TH-232	Y	1.00	1.4E-09	1.4E-09
TH-234	Y	1.00	1.4E-06	1.4E-06

SITE INFORMATION

Temperature:	12 degrees C
Precipitation:	98 cm/y
Mixing Height:	950 m

SOURCE INFORMATION

Source Number:	1
Stack Height (m):	14.90
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
May 1, 1995 12:49 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Cooling Tower

Dataset Name: 94-COOLWTR(I)-G1
Dataset Date: May 1, 1995 12:21 am
Wind File: WNDFILES\WIND94.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	7.32E-08
BREAST	8.30E-08
R MAR	1.75E-06
LUNGS	9.58E-05
THYROID	7.13E-08
ENDOST	2.44E-05
RMNDR	2.07E-06
EFFEC	1.31E-05

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	1.50E-06
INHALATION	1.16E-05
AIR IMMERSION	1.16E-12
GROUND SURFACE	1.39E-08
INTERNAL	1.31E-05
EXTERNAL	1.39E-08
TOTAL	1.31E-05

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	5.56E-06
U-235	2.88E-07
U-236	1.93E-07
U-238	6.55E-06
RA-226	9.97E-10
RA-228	1.76E-09
TH-228	3.63E-07
TH-230	2.57E-08
TH-232	8.20E-08
TH-234	2.75E-08
TOTAL	1.31E-05

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	1.98E-12
BONE	1.30E-12
THYROID	1.63E-14
BREAST	1.84E-13
LUNG	1.57E-10
STOMACH	1.27E-13
BOWEL	3.64E-13
LIVER	1.10E-13
PANCREAS	7.20E-14
URINARY	4.36E-12
OTHER	8.80E-14
TOTAL	1.65E-10

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	8.08E-12
INHALATION	1.57E-10
AIR IMMERSION	2.58E-17
GROUND SURFACE	3.19E-13
INTERNAL	1.65E-10
EXTERNAL	3.19E-13
TOTAL	1.65E-10

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	6.87E-11
U-235	3.69E-12
U-236	2.39E-12
U-238	8.19E-11
RA-226	1.03E-14
RA-228	1.57E-14
TH-228	7.24E-12
TH-230	2.09E-13
TH-232	4.60E-13
TH-234	6.61E-13
TOTAL	1.65E-10

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

	Distance (m)						
Direction	948	924	1778	1520	1287	1218	1385
N	3.6E-06	3.6E-06	3.0E-06	3.3E-06	3.5E-06	3.5E-06	3.4E-06
NNW	2.8E-06	2.8E-06	2.4E-06	2.6E-06	2.7E-06	2.7E-06	2.6E-06
NW	2.2E-06	2.2E-06	1.8E-06	1.9E-06	2.1E-06	2.1E-06	2.0E-06
WNW	4.7E-06	4.7E-06	3.6E-06	3.9E-06	4.2E-06	4.3E-06	4.1E-06
W	1.3E-05	1.3E-05	8.8E-06	9.9E-06	1.1E-05	1.2E-05	1.1E-05
WSW	8.4E-06	8.4E-06	5.6E-06	6.4E-06	7.2E-06	7.5E-06	6.8E-06
SW	6.0E-06	6.1E-06	3.5E-06	4.0E-06	4.7E-06	4.9E-06	4.4E-06
SSW	4.7E-06	4.8E-06	2.9E-06	3.3E-06	3.8E-06	4.0E-06	3.6E-06
S	3.6E-06	3.6E-06	2.8E-06	3.1E-06	3.4E-06	3.5E-06	3.3E-06
SSE	8.0E-06	8.1E-06	5.4E-06	6.0E-06	6.7E-06	6.9E-06	6.4E-06
SE	1.0E-05	1.1E-05	6.6E-06	7.5E-06	8.5E-06	8.9E-06	8.1E-06
ESE	1.1E-05	1.1E-05	7.8E-06	8.7E-06	9.7E-06	1.0E-05	9.2E-06
E	1.0E-05	1.1E-05	6.9E-06	7.7E-06	8.6E-06	9.0E-06	8.2E-06
ENE	1.3E-05	1.3E-05	9.6E-06	1.0E-05	1.1E-05	1.2E-05	1.1E-05
NE	1.2E-05	1.2E-05	8.5E-06	9.5E-06	1.0E-05	1.1E-05	1.0E-05
NNE	6.3E-06	6.3E-06	5.2E-06	5.6E-06	6.0E-06	6.1E-06	5.9E-06

	Distance (m)						
Direction	1462	1496	1639	1634	1630	1519	1506
N	3.3E-06	3.3E-06	3.1E-06	3.1E-06	3.1E-06	3.3E-06	3.3E-06
NNW	2.6E-06	2.6E-06	2.5E-06	2.5E-06	2.5E-06	2.6E-06	2.6E-06
NW	2.0E-06	2.0E-06	1.9E-06	1.9E-06	1.9E-06	1.9E-06	1.9E-06
WNW	4.0E-06	3.9E-06	3.7E-06	3.8E-06	3.8E-06	3.9E-06	3.9E-06
W	1.0E-05	1.0E-05	9.3E-06	9.4E-06	9.4E-06	9.9E-06	1.0E-05
WSW	6.6E-06	6.5E-06	6.0E-06	6.0E-06	6.0E-06	6.4E-06	6.4E-06
SW	4.2E-06	4.1E-06	3.8E-06	3.8E-06	3.8E-06	4.0E-06	4.1E-06
SSW	3.4E-06	3.4E-06	3.1E-06	3.1E-06	3.1E-06	3.3E-06	3.3E-06
S	3.2E-06	3.1E-06	3.0E-06	3.0E-06	3.0E-06	3.1E-06	3.1E-06
SSE	6.2E-06	6.1E-06	5.7E-06	5.7E-06	5.7E-06	6.0E-06	6.0E-06
SE	7.7E-06	7.6E-06	7.1E-06	7.1E-06	7.1E-06	7.5E-06	7.6E-06
ESE	8.9E-06	8.8E-06	8.3E-06	8.3E-06	8.3E-06	8.7E-06	8.7E-06
E	7.9E-06	7.8E-06	7.3E-06	7.3E-06	7.3E-06	7.7E-06	7.8E-06
ENE	1.1E-05	1.1E-05	1.0E-05	1.0E-05	1.0E-05	1.0E-05	1.0E-05
NE	9.8E-06	9.6E-06	9.1E-06	9.1E-06	9.1E-06	9.5E-06	9.6E-06
NNE	5.7E-06	5.7E-06	5.4E-06	5.4E-06	5.4E-06	5.6E-06	5.7E-06

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

	Distance (m)					
Direction	2068	1538	1189	1161	1460	1374
N	2.7E-06	3.2E-06	3.6E-06	3.6E-06	3.3E-06	3.4E-06
NNW	2.3E-06	2.5E-06	2.7E-06	2.8E-06	2.6E-06	2.6E-06
NW	1.7E-06	1.9E-06	2.1E-06	2.1E-06	2.0E-06	2.0E-06
WNW	3.3E-06	3.9E-06	4.4E-06	4.4E-06	4.0E-06	4.1E-06
W	7.7E-06	9.8E-06	1.2E-05	1.2E-05	1.0E-05	1.1E-05
WSW	4.9E-06	6.3E-06	7.6E-06	7.7E-06	6.6E-06	6.9E-06
SW	3.0E-06	4.0E-06	5.0E-06	5.1E-06	4.2E-06	4.4E-06
SSW	2.6E-06	3.3E-06	4.0E-06	4.1E-06	3.4E-06	3.6E-06
S	2.5E-06	3.1E-06	3.5E-06	3.5E-06	3.2E-06	3.3E-06
SSE	4.8E-06	5.9E-06	7.1E-06	7.2E-06	6.2E-06	6.4E-06
SE	5.9E-06	7.5E-06	9.0E-06	9.2E-06	7.8E-06	8.1E-06
ESE	6.9E-06	8.6E-06	1.0E-05	1.0E-05	8.9E-06	9.3E-06
E	6.3E-06	7.6E-06	9.1E-06	9.2E-06	7.9E-06	8.2E-06
ENE	8.7E-06	1.0E-05	1.2E-05	1.2E-05	1.1E-05	1.1E-05
NE	7.6E-06	9.4E-06	1.1E-05	1.1E-05	9.8E-06	1.0E-05
NNE	4.7E-06	5.6E-06	6.2E-06	6.2E-06	5.7E-06	5.9E-06

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

Direction	Distance (m) 948	924	1778	1520	1287	1218	1385
N	4.3E-11	4.3E-11	3.6E-11	3.9E-11	4.2E-11	4.3E-11	4.1E-11
NNW	3.2E-11	3.2E-11	2.8E-11	3.0E-11	3.1E-11	3.2E-11	3.1E-11
NW	2.4E-11	2.4E-11	2.0E-11	2.2E-11	2.3E-11	2.3E-11	2.2E-11
WNW	5.5E-11	5.6E-11	4.3E-11	4.6E-11	5.0E-11	5.2E-11	4.9E-11
W	1.6E-10	1.7E-10	1.1E-10	1.3E-10	1.4E-10	1.5E-10	1.3E-10
WSW	1.1E-10	1.1E-10	7.0E-11	8.0E-11	9.0E-11	9.4E-11	8.6E-11
SW	7.4E-11	7.5E-11	4.2E-11	5.0E-11	5.8E-11	6.1E-11	5.4E-11
SSW	5.7E-11	5.8E-11	3.5E-11	4.0E-11	4.6E-11	4.8E-11	4.3E-11
S	4.1E-11	4.1E-11	3.2E-11	3.6E-11	3.9E-11	4.0E-11	3.8E-11
SSE	9.6E-11	9.7E-11	6.5E-11	7.2E-11	8.1E-11	8.4E-11	7.7E-11
SE	1.3E-10	1.3E-10	8.1E-11	9.2E-11	1.0E-10	1.1E-10	9.9E-11
ESE	1.4E-10	1.4E-10	9.7E-11	1.1E-10	1.2E-10	1.2E-10	1.1E-10
E	1.3E-10	1.3E-10	8.5E-11	9.4E-11	1.1E-10	1.1E-10	1.0E-10
ENE	1.6E-10	1.6E-10	1.2E-10	1.3E-10	1.4E-10	1.4E-10	1.4E-10
NE	1.5E-10	1.5E-10	1.1E-10	1.2E-10	1.3E-10	1.4E-10	1.3E-10
NNE	7.8E-11	7.7E-11	6.4E-11	7.0E-11	7.5E-11	7.6E-11	7.3E-11

Direction	Distance (m) 1462	1496	1639	1634	1630	1519	1506
N	4.0E-11	4.0E-11	3.8E-11	3.8E-11	3.8E-11	3.9E-11	4.0E-11
NNW	3.0E-11	3.0E-11	2.9E-11	2.9E-11	2.9E-11	3.0E-11	3.0E-11
NW	2.2E-11	2.2E-11	2.1E-11	2.1E-11	2.1E-11	2.2E-11	2.2E-11
WNW	4.7E-11	4.7E-11	4.5E-11	4.5E-11	4.5E-11	4.7E-11	4.7E-11
W	1.3E-10	1.3E-10	1.2E-10	1.2E-10	1.2E-10	1.3E-10	1.3E-10
WSW	8.2E-11	8.1E-11	7.5E-11	7.5E-11	7.5E-11	8.0E-11	8.0E-11
SW	5.2E-11	5.0E-11	4.6E-11	4.6E-11	4.6E-11	5.0E-11	5.0E-11
SSW	4.1E-11	4.0E-11	3.7E-11	3.7E-11	3.8E-11	4.0E-11	4.0E-11
S	3.7E-11	3.6E-11	3.4E-11	3.4E-11	3.5E-11	3.6E-11	3.6E-11
SSE	7.4E-11	7.3E-11	6.9E-11	6.9E-11	6.9E-11	7.2E-11	7.3E-11
SE	9.5E-11	9.3E-11	8.7E-11	8.7E-11	8.7E-11	9.2E-11	9.3E-11
ESE	1.1E-10	1.1E-10	1.0E-10	1.0E-10	1.0E-10	1.1E-10	1.1E-10
E	9.7E-11	9.5E-11	9.0E-11	9.0E-11	9.0E-11	9.4E-11	9.5E-11
ENE	1.3E-10	1.3E-10	1.3E-10	1.3E-10	1.3E-10	1.3E-10	1.3E-10
NE	1.2E-10	1.2E-10	1.1E-10	1.1E-10	1.1E-10	1.2E-10	1.2E-10
NNE	7.1E-11	7.0E-11	6.7E-11	6.7E-11	6.7E-11	7.0E-11	7.0E-11

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

	Distance (m)					
Direction	2068	1538	1189	1161	1460	1374
N	3.2E-11	3.9E-11	4.3E-11	4.3E-11	4.0E-11	4.1E-11
NNW	2.6E-11	3.0E-11	3.2E-11	3.2E-11	3.0E-11	3.1E-11
NW	1.8E-11	2.1E-11	2.4E-11	2.4E-11	2.2E-11	2.2E-11
WNW	3.9E-11	4.6E-11	5.2E-11	5.3E-11	4.7E-11	4.9E-11
W	9.7E-11	1.2E-10	1.5E-10	1.5E-10	1.3E-10	1.3E-10
WSW	6.1E-11	7.9E-11	9.5E-11	9.6E-11	8.2E-11	8.6E-11
SW	3.6E-11	4.9E-11	6.2E-11	6.4E-11	5.2E-11	5.5E-11
SSW	3.0E-11	3.9E-11	4.9E-11	5.0E-11	4.1E-11	4.4E-11
S	2.9E-11	3.6E-11	4.0E-11	4.1E-11	3.7E-11	3.8E-11
SSE	5.8E-11	7.2E-11	8.5E-11	8.6E-11	7.4E-11	7.8E-11
SE	7.2E-11	9.1E-11	1.1E-10	1.1E-10	9.5E-11	1.0E-10
ESE	8.6E-11	1.1E-10	1.3E-10	1.3E-10	1.1E-10	1.2E-10
E	7.7E-11	9.4E-11	1.1E-10	1.1E-10	9.7E-11	1.0E-10
ENE	1.1E-10	1.3E-10	1.5E-10	1.5E-10	1.3E-10	1.4E-10
NE	9.5E-11	1.2E-10	1.4E-10	1.4E-10	1.2E-10	1.3E-10
NNE	5.8E-11	6.9E-11	7.6E-11	7.7E-11	7.1E-11	7.3E-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
May 1, 1995 12:49 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

1.30E-05

At This Location: 940 Meters West

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Cooling Tower

Dataset Name: 94-COOLWTR(I)-G2
Dataset Date: May 1, 1995 12:25 am
Wind File: WNDFILES\WIND94.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 940 Meters West
Lifetime Fatal Cancer Risk: 1.64E-10

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	7.03E-08
BREAST	8.00E-08
R MAR	1.67E-06
LUNGS	9.54E-05
THYROID	6.84E-08
ENDOST	2.33E-05
RMNDR	1.98E-06
EFFEC	1.30E-05

RADIONUCLIDE EMISSIONS DURING THE YEAR 1994

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	1.00	2.4E-07	2.4E-07
U-235	Y	1.00	1.3E-08	1.3E-08
U-236	Y	1.00	8.8E-09	8.8E-09
U-238	Y	1.00	3.2E-07	3.2E-07
RA-226	W	1.00	2.2E-10	2.2E-10
RA-228	W	1.00	8.7E-10	8.7E-10
TH-228	Y	1.00	9.1E-09	9.1E-09
TH-230	Y	1.00	6.4E-10	6.4E-10
TH-232	Y	1.00	1.4E-09	1.4E-09
TH-234	Y	1.00	1.4E-06	1.4E-06

SITE INFORMATION

Temperature:	12 degrees C
Precipitation:	98 cm/y
Mixing Height:	950 m

SOURCE INFORMATION

Source Number:	1
Stack Height (m):	14.90
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
May 1, 1995 12:49 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Cooling Tower

Dataset Name: 94-COOLWTR(I)-G2
Dataset Date: May 1, 1995 12:25 am
Wind File: WNDFILES\WIND94.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	7.03E-08
BREAST	8.00E-08
R MAR	1.67E-06
LUNGS	9.54E-05
THYROID	6.84E-08
ENDOST	2.33E-05
RMNDR	1.98E-06
EFFEC	1.30E-05

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	1.43E-06
INHALATION	1.15E-05
AIR IMMERSION	1.16E-12
GROUND SURFACE	1.37E-08
INTERNAL	1.30E-05
EXTERNAL	1.37E-08
TOTAL	1.30E-05

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	5.51E-06
U-235	2.85E-07
U-236	1.91E-07
U-238	6.49E-06
RA-226	9.63E-10
RA-228	1.69E-09
TH-228	3.61E-07
TH-230	2.56E-08
TH-232	8.17E-08
TH-234	2.65E-08
TOTAL	1.30E-05

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	1.89E-12
BONE	1.24E-12
THYROID	1.57E-14
BREAST	1.79E-13
LUNG	1.56E-10
STOMACH	1.22E-13
BOWEL	3.49E-13
LIVER	1.06E-13
PANCREAS	6.93E-14
URINARY	4.15E-12
OTHER	8.47E-14
TOTAL	1.64E-10

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	7.68E-12
INHALATION	1.56E-10
AIR IMMERSION	2.57E-17
GROUND SURFACE	3.15E-13
INTERNAL	1.64E-10
EXTERNAL	3.15E-13
TOTAL	1.64E-10

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	6.83E-11
U-235	3.67E-12
U-236	2.37E-12
U-238	8.14E-11
RA-226	1.01E-14
RA-228	1.52E-14
TH-228	7.22E-12
TH-230	2.08E-13
TH-232	4.58E-13
TH-234	6.49E-13
TOTAL	1.64E-10

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

	Distance (m)						
Direction	940	1277	2087	1792	2376	2453	2418
N	3.6E-06	3.4E-06	2.6E-06	2.9E-06	2.4E-06	2.3E-06	2.3E-06
NNW	2.8E-06	2.6E-06	2.2E-06	2.3E-06	2.0E-06	2.0E-06	2.0E-06
NW	2.2E-06	2.0E-06	1.6E-06	1.7E-06	1.5E-06	1.5E-06	1.5E-06
WNW	4.7E-06	4.2E-06	3.2E-06	3.5E-06	2.9E-06	2.9E-06	2.9E-06
W	1.3E-05	1.1E-05	7.6E-06	8.6E-06	6.7E-06	6.5E-06	6.6E-06
WSW	8.4E-06	7.2E-06	4.8E-06	5.5E-06	4.2E-06	4.1E-06	4.1E-06
SW	5.9E-06	4.7E-06	2.9E-06	3.4E-06	2.5E-06	2.4E-06	2.5E-06
SSW	4.7E-06	3.8E-06	2.5E-06	2.8E-06	2.2E-06	2.1E-06	2.2E-06
S	3.6E-06	3.3E-06	2.4E-06	2.7E-06	2.2E-06	2.1E-06	2.1E-06
SSE	8.0E-06	6.7E-06	4.7E-06	5.3E-06	4.2E-06	4.1E-06	4.2E-06
SE	1.0E-05	8.5E-06	5.8E-06	6.5E-06	5.2E-06	5.0E-06	5.1E-06
ESE	1.1E-05	9.6E-06	6.8E-06	7.7E-06	6.1E-06	5.9E-06	6.0E-06
E	1.0E-05	8.6E-06	6.2E-06	6.8E-06	5.6E-06	5.5E-06	5.6E-06
ENE	1.3E-05	1.1E-05	8.6E-06	9.5E-06	7.8E-06	7.6E-06	7.7E-06
NE	1.2E-05	1.0E-05	7.5E-06	8.4E-06	6.7E-06	6.5E-06	6.5E-06
NNE	6.2E-06	6.0E-06	4.6E-06	5.1E-06	4.1E-06	4.0E-06	4.1E-06

	Distance (m)						
Direction	1383	1597	2132	2191	1456	2512	1545
N	3.3E-06	3.1E-06	2.6E-06	2.5E-06	3.3E-06	2.2E-06	3.2E-06
NNW	2.6E-06	2.5E-06	2.2E-06	2.1E-06	2.5E-06	2.0E-06	2.5E-06
NW	2.0E-06	1.8E-06	1.6E-06	1.6E-06	1.9E-06	1.4E-06	1.9E-06
WNW	4.0E-06	3.7E-06	3.1E-06	3.1E-06	3.9E-06	2.8E-06	3.8E-06
W	1.1E-05	9.5E-06	7.4E-06	7.2E-06	1.0E-05	6.3E-06	9.7E-06
WSW	6.8E-06	6.1E-06	4.7E-06	4.6E-06	6.5E-06	4.0E-06	6.2E-06
SW	4.3E-06	3.8E-06	2.8E-06	2.7E-06	4.1E-06	2.4E-06	3.9E-06
SSW	3.5E-06	3.1E-06	2.4E-06	2.4E-06	3.4E-06	2.1E-06	3.2E-06
S	3.2E-06	3.0E-06	2.4E-06	2.3E-06	3.1E-06	2.1E-06	3.0E-06
SSE	6.3E-06	5.7E-06	4.6E-06	4.5E-06	6.1E-06	4.0E-06	5.9E-06
SE	8.0E-06	7.2E-06	5.7E-06	5.5E-06	7.7E-06	4.9E-06	7.4E-06
ESE	9.2E-06	8.3E-06	6.7E-06	6.5E-06	8.9E-06	5.8E-06	8.5E-06
E	8.2E-06	7.4E-06	6.1E-06	6.0E-06	7.9E-06	5.4E-06	7.6E-06
ENE	1.1E-05	1.0E-05	8.5E-06	8.3E-06	1.1E-05	7.5E-06	1.0E-05
NE	1.0E-05	9.2E-06	7.3E-06	7.2E-06	9.7E-06	6.3E-06	9.4E-06
NNE	5.8E-06	5.4E-06	4.5E-06	4.4E-06	5.7E-06	3.9E-06	5.5E-06

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

	Distance (m)					
Direction	1776	1871	1830	2121	2150	1485
N	2.9E-06	2.8E-06	2.9E-06	2.6E-06	2.6E-06	3.2E-06
NNW	2.4E-06	2.3E-06	2.3E-06	2.2E-06	2.1E-06	2.5E-06
NW	1.7E-06	1.7E-06	1.7E-06	1.6E-06	1.6E-06	1.9E-06
WNW	3.5E-06	3.4E-06	3.5E-06	3.2E-06	3.1E-06	3.9E-06
W	8.7E-06	8.3E-06	8.5E-06	7.4E-06	7.4E-06	1.0E-05
WSW	5.6E-06	5.3E-06	5.4E-06	4.7E-06	4.7E-06	6.4E-06
SW	3.4E-06	3.2E-06	3.3E-06	2.8E-06	2.8E-06	4.1E-06
SSW	2.8E-06	2.7E-06	2.8E-06	2.4E-06	2.4E-06	3.3E-06
S	2.8E-06	2.6E-06	2.7E-06	2.4E-06	2.4E-06	3.1E-06
SSE	5.3E-06	5.1E-06	5.2E-06	4.6E-06	4.6E-06	6.0E-06
SE	6.6E-06	6.3E-06	6.4E-06	5.7E-06	5.6E-06	7.6E-06
ESE	7.7E-06	7.4E-06	7.6E-06	6.7E-06	6.6E-06	8.8E-06
E	6.9E-06	6.6E-06	6.7E-06	6.1E-06	6.0E-06	7.8E-06
ENE	9.5E-06	9.3E-06	9.4E-06	8.5E-06	8.4E-06	1.1E-05
NE	8.5E-06	8.2E-06	8.3E-06	7.4E-06	7.3E-06	9.6E-06
NNE	5.1E-06	4.9E-06	5.0E-06	4.5E-06	4.5E-06	5.6E-06

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

	Distance (m)						
Direction	940	1277	2087	1792	2376	2453	2418
N	4.3E-11	4.2E-11	3.2E-11	3.5E-11	2.8E-11	2.8E-11	2.8E-11
NNW	3.2E-11	3.1E-11	2.6E-11	2.8E-11	2.4E-11	2.4E-11	2.4E-11
NW	2.4E-11	2.3E-11	1.8E-11	2.0E-11	1.7E-11	1.6E-11	1.6E-11
WNW	5.5E-11	5.0E-11	3.8E-11	4.2E-11	3.5E-11	3.4E-11	3.5E-11
W	1.6E-10	1.4E-10	9.6E-11	1.1E-10	8.4E-11	8.2E-11	8.3E-11
WSW	1.1E-10	9.0E-11	6.0E-11	6.9E-11	5.2E-11	5.1E-11	5.1E-11
SW	7.4E-11	5.8E-11	3.5E-11	4.2E-11	3.1E-11	2.9E-11	3.0E-11
SSW	5.7E-11	4.6E-11	3.0E-11	3.4E-11	2.6E-11	2.6E-11	2.6E-11
S	4.1E-11	3.9E-11	2.8E-11	3.2E-11	2.5E-11	2.4E-11	2.5E-11
SSE	9.6E-11	8.1E-11	5.7E-11	6.4E-11	5.1E-11	5.0E-11	5.0E-11
SE	1.3E-10	1.0E-10	7.1E-11	8.1E-11	6.3E-11	6.1E-11	6.2E-11
ESE	1.4E-10	1.2E-10	8.5E-11	9.6E-11	7.6E-11	7.3E-11	7.4E-11
E	1.3E-10	1.1E-10	7.6E-11	8.4E-11	6.9E-11	6.8E-11	6.9E-11
ENE	1.6E-10	1.4E-10	1.1E-10	1.2E-10	9.8E-11	9.6E-11	9.7E-11
NE	1.5E-10	1.3E-10	9.4E-11	1.1E-10	8.4E-11	8.1E-11	8.2E-11
NNE	7.7E-11	7.4E-11	5.7E-11	6.3E-11	5.1E-11	5.0E-11	5.0E-11

	Distance (m)						
Direction	1383	1597	2132	2191	1456	2512	1545
N	4.1E-11	3.8E-11	3.1E-11	3.0E-11	4.0E-11	2.7E-11	3.9E-11
NNW	3.0E-11	2.9E-11	2.6E-11	2.5E-11	3.0E-11	2.3E-11	2.9E-11
NW	2.2E-11	2.1E-11	1.8E-11	1.7E-11	2.2E-11	1.6E-11	2.1E-11
WNW	4.8E-11	4.5E-11	3.8E-11	3.7E-11	4.7E-11	3.4E-11	4.6E-11
W	1.3E-10	1.2E-10	9.4E-11	9.1E-11	1.3E-10	8.0E-11	1.2E-10
WSW	8.5E-11	7.6E-11	5.9E-11	5.7E-11	8.2E-11	4.9E-11	7.9E-11
SW	5.4E-11	4.7E-11	3.4E-11	3.3E-11	5.1E-11	2.9E-11	4.8E-11
SSW	4.3E-11	3.8E-11	2.9E-11	2.8E-11	4.1E-11	2.5E-11	3.9E-11
S	3.8E-11	3.5E-11	2.8E-11	2.7E-11	3.7E-11	2.4E-11	3.5E-11
SSE	7.7E-11	7.0E-11	5.6E-11	5.5E-11	7.4E-11	4.9E-11	7.1E-11
SE	9.9E-11	8.8E-11	7.0E-11	6.8E-11	9.5E-11	6.0E-11	9.1E-11
ESE	1.1E-10	1.0E-10	8.3E-11	8.1E-11	1.1E-10	7.2E-11	1.1E-10
E	1.0E-10	9.1E-11	7.5E-11	7.3E-11	9.7E-11	6.7E-11	9.3E-11
ENE	1.4E-10	1.3E-10	1.1E-10	1.0E-10	1.3E-10	9.4E-11	1.3E-10
NE	1.3E-10	1.2E-10	9.2E-11	9.0E-11	1.2E-10	7.9E-11	1.2E-10
NNE	7.2E-11	6.8E-11	5.6E-11	5.5E-11	7.1E-11	4.9E-11	6.9E-11

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

	Distance (m)					
Direction	1776	1871	1830	2121	2150	1485
N	3.6E-11	3.4E-11	3.5E-11	3.1E-11	3.1E-11	3.9E-11
NNW	2.8E-11	2.7E-11	2.7E-11	2.6E-11	2.5E-11	3.0E-11
NW	2.0E-11	1.9E-11	1.9E-11	1.8E-11	1.8E-11	2.1E-11
WNW	4.2E-11	4.1E-11	4.2E-11	3.8E-11	3.8E-11	4.7E-11
W	1.1E-10	1.1E-10	1.1E-10	9.4E-11	9.3E-11	1.3E-10
WSW	7.0E-11	6.6E-11	6.8E-11	5.9E-11	5.8E-11	8.1E-11
SW	4.2E-11	4.0E-11	4.1E-11	3.5E-11	3.4E-11	5.0E-11
SSW	3.4E-11	3.3E-11	3.4E-11	2.9E-11	2.9E-11	4.0E-11
S	3.2E-11	3.1E-11	3.1E-11	2.8E-11	2.8E-11	3.6E-11
SSE	6.5E-11	6.2E-11	6.3E-11	5.6E-11	5.6E-11	7.3E-11
SE	8.1E-11	7.8E-11	7.9E-11	7.0E-11	6.9E-11	9.4E-11
ESE	9.6E-11	9.3E-11	9.4E-11	8.4E-11	8.3E-11	1.1E-10
E	8.5E-11	8.2E-11	8.3E-11	7.5E-11	7.4E-11	9.5E-11
ENE	1.2E-10	1.2E-10	1.2E-10	1.1E-10	1.1E-10	1.3E-10
NE	1.1E-10	1.0E-10	1.0E-10	9.3E-11	9.2E-11	1.2E-10
NNE	6.4E-11	6.2E-11	6.3E-11	5.6E-11	5.6E-11	7.0E-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
Jun 12, 1995 7:53 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent (mrem/year)
1.78E-06

At This Location: 858 Meters East Northeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Plant 20, WATER PLANT LAB HOODS

Dataset Name: 94-WTRPLT-(I)-G1
Dataset Date: Jun 12, 1995 7:49 am
Wind File: WNDFILES\WIND94.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 858 Meters East Northeast
Lifetime Fatal Cancer Risk: 2.34E-11

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	5.29E-09
BREAST	6.03E-09
R MAR	1.30E-07
LUNGS	1.39E-05
THYROID	5.15E-09
ENDOST	1.80E-06
RMNDR	1.45E-07
EFFEC	1.78E-06

RADIONUCLIDE EMISSIONS DURING THE YEAR 1994

Nuclide	Class	Size	Source #1 Ci/y	Source #2 Ci/y	TOTAL Ci/y
U-234	Y	1.00	1.4E-09	1.4E-09	2.8E-09
U-235	Y	1.00	7.6E-11	7.6E-11	1.5E-10
U-236	Y	1.00	5.2E-11	5.2E-11	1.0E-10
U-238	Y	1.00	1.9E-09	1.9E-09	3.8E-09
RA-226	W	1.00	1.3E-12	1.3E-12	2.5E-12
RA-228	W	1.00	5.1E-12	5.1E-12	1.0E-11
TH-228	Y	1.00	5.4E-11	5.4E-11	1.1E-10
TH-230	Y	1.00	3.8E-12	3.8E-12	7.6E-12
TH-232	Y	1.00	8.5E-12	8.5E-12	1.7E-11
TH-234	Y	1.00	7.9E-09	7.9E-09	1.6E-08

SITE INFORMATION

Temperature: 12 degrees C
Precipitation: 98 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	7.87E+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	1712	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
Jun 12, 1995 7:53 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Plant 20, WATER PLANT LAB HOODS

Dataset Name: 94-WTRPLT-(I)-G1
Dataset Date: Jun 12, 1995 7:49 am
Wind File: WNDFILES\WIND94.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	5.29E-09
BREAST	6.03E-09
R MAR	1.30E-07
LUNGS	1.39E-05
THYROID	5.15E-09
ENDOST	1.80E-06
RMNDR	1.45E-07
EFFEC	1.78E-06

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	1.03E-07
INHALATION	1.68E-06
AIR IMMERSION	1.68E-13
GROUND SURFACE	1.04E-09
INTERNAL	1.78E-06
EXTERNAL	1.04E-09
TOTAL	1.78E-06

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	7.57E-07
U-235	3.85E-08
U-236	2.62E-08
U-238	8.92E-07
RA-226	9.08E-11
RA-228	1.45E-10
TH-228	5.23E-08
TH-230	3.67E-09
TH-232	1.18E-08
TH-234	2.45E-09
TOTAL	1.78E-06

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	1.46E-13
BONE	9.58E-14
THYROID	1.19E-15
BREAST	1.35E-14
LUNG	2.28E-11
STOMACH	9.28E-15
BOWEL	2.72E-14
LIVER	8.56E-15
PANCREAS	5.23E-15
URINARY	3.02E-13
OTHER	6.40E-15
TOTAL	2.34E-11

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	5.51E-13
INHALATION	2.28E-11
AIR IMMERSION	3.73E-18
GROUND SURFACE	2.40E-14
INTERNAL	2.33E-11
EXTERNAL	2.40E-14
TOTAL	2.34E-11

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	9.73E-12
U-235	5.05E-13
U-236	3.37E-13
U-238	1.16E-11
RA-226	1.21E-15
RA-228	1.49E-15
TH-228	1.05E-12
TH-230	3.01E-14
TH-232	6.63E-14
TH-234	7.82E-14
TOTAL	2.34E-11

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

	Distance (m)						
Direction	886	858	1712	1466	1244	1225	1417
N	4.4E-07	4.5E-07	1.8E-07	2.2E-07	2.8E-07	2.8E-07	2.3E-07
NNW	4.6E-07	4.8E-07	1.9E-07	2.3E-07	2.9E-07	3.0E-07	2.4E-07
NW	5.0E-07	5.2E-07	2.1E-07	2.6E-07	3.2E-07	3.3E-07	2.7E-07
WNW	8.6E-07	9.0E-07	3.5E-07	4.4E-07	5.6E-07	5.7E-07	4.6E-07
W	9.8E-07	1.0E-06	3.7E-07	4.7E-07	6.0E-07	6.1E-07	4.9E-07
WSW	6.2E-07	6.4E-07	2.4E-07	3.0E-07	3.9E-07	3.9E-07	3.2E-07
SW	3.9E-07	4.1E-07	1.6E-07	2.0E-07	2.5E-07	2.6E-07	2.1E-07
SSW	4.7E-07	4.9E-07	2.0E-07	2.5E-07	3.1E-07	3.2E-07	2.6E-07
S	5.4E-07	5.6E-07	3.5E-07	3.9E-07	4.2E-07	4.3E-07	3.9E-07
SSE	1.5E-06	1.5E-06	6.4E-07	8.0E-07	1.0E-06	1.0E-06	8.4E-07
SE	1.6E-06	1.7E-06	6.9E-07	8.6E-07	1.1E-06	1.1E-06	9.0E-07
ESE	1.5E-06	1.6E-06	6.4E-07	8.0E-07	1.0E-06	1.0E-06	8.3E-07
E	1.7E-06	1.7E-06	6.8E-07	8.5E-07	1.1E-06	1.1E-06	9.0E-07
ENE	1.7E-06	1.8E-06	6.7E-07	8.4E-07	1.1E-06	1.1E-06	8.9E-07
NE	1.1E-06	1.1E-06	4.1E-07	5.1E-07	6.5E-07	6.7E-07	5.4E-07
NNE	7.4E-07	7.7E-07	2.9E-07	3.6E-07	4.6E-07	4.7E-07	3.8E-07

	Distance (m)						
Direction	1501	1537	1686	1683	1687	1583	1572
N	2.1E-07	2.1E-07	1.8E-07	1.8E-07	1.8E-07	2.0E-07	2.0E-07
NNW	2.2E-07	2.2E-07	1.9E-07	1.9E-07	1.9E-07	2.1E-07	2.1E-07
NW	2.5E-07	2.4E-07	2.1E-07	2.1E-07	2.1E-07	2.3E-07	2.3E-07
WNW	4.3E-07	4.1E-07	3.6E-07	3.6E-07	3.6E-07	4.0E-07	4.0E-07
W	4.5E-07	4.3E-07	3.8E-07	3.8E-07	3.8E-07	4.2E-07	4.2E-07
WSW	2.9E-07	2.8E-07	2.5E-07	2.5E-07	2.5E-07	2.7E-07	2.8E-07
SW	1.9E-07	1.9E-07	1.7E-07	1.7E-07	1.7E-07	1.8E-07	1.8E-07
SSW	2.4E-07	2.3E-07	2.0E-07	2.0E-07	2.0E-07	2.2E-07	2.2E-07
S	3.8E-07	3.8E-07	3.6E-07	3.6E-07	3.6E-07	3.7E-07	3.7E-07
SSE	7.8E-07	7.5E-07	6.6E-07	6.6E-07	6.6E-07	7.2E-07	7.3E-07
SE	8.3E-07	8.0E-07	7.0E-07	7.1E-07	7.0E-07	7.7E-07	7.8E-07
ESE	7.7E-07	7.4E-07	6.5E-07	6.5E-07	6.5E-07	7.1E-07	7.2E-07
E	8.2E-07	8.0E-07	6.9E-07	7.0E-07	6.9E-07	7.6E-07	7.7E-07
ENE	8.2E-07	7.9E-07	6.9E-07	6.9E-07	6.8E-07	7.5E-07	7.6E-07
NE	5.0E-07	4.8E-07	4.2E-07	4.2E-07	4.2E-07	4.6E-07	4.6E-07
NNE	3.5E-07	3.4E-07	3.0E-07	3.0E-07	2.9E-07	3.2E-07	3.3E-07

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

	Distance (m)					
Direction	2137	1607	1248	1218	1459	1345
N	1.3E-07	1.9E-07	2.8E-07	2.9E-07	2.2E-07	2.5E-07
NNW	1.3E-07	2.0E-07	2.9E-07	3.0E-07	2.3E-07	2.6E-07
NW	1.5E-07	2.3E-07	3.2E-07	3.3E-07	2.6E-07	2.9E-07
WNW	2.5E-07	3.9E-07	5.5E-07	5.7E-07	4.4E-07	5.0E-07
W	2.6E-07	4.1E-07	5.9E-07	6.1E-07	4.7E-07	5.3E-07
WSW	1.7E-07	2.7E-07	3.8E-07	4.0E-07	3.1E-07	3.5E-07
SW	1.2E-07	1.8E-07	2.5E-07	2.6E-07	2.0E-07	2.3E-07
SSW	1.4E-07	2.2E-07	3.1E-07	3.2E-07	2.5E-07	2.8E-07
S	3.1E-07	3.7E-07	4.2E-07	4.3E-07	3.9E-07	4.0E-07
SSE	4.6E-07	7.1E-07	1.0E-06	1.0E-06	8.1E-07	9.0E-07
SE	4.9E-07	7.5E-07	1.1E-06	1.1E-06	8.6E-07	9.7E-07
ESE	4.6E-07	7.0E-07	9.9E-07	1.0E-06	8.0E-07	9.0E-07
E	4.8E-07	7.5E-07	1.1E-06	1.1E-06	8.6E-07	9.6E-07
ENE	4.8E-07	7.4E-07	1.1E-06	1.1E-06	8.5E-07	9.6E-07
NE	2.9E-07	4.5E-07	6.5E-07	6.7E-07	5.2E-07	5.8E-07
NNE	2.1E-07	3.2E-07	4.6E-07	4.7E-07	3.7E-07	4.1E-07

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

	Distance (m)						
Direction	886	858	1712	1466	1244	1225	1417
N	5.6E-12	5.9E-12	2.2E-12	2.8E-12	3.6E-12	3.6E-12	3.0E-12
NNW	6.0E-12	6.3E-12	2.3E-12	2.9E-12	3.7E-12	3.8E-12	3.1E-12
NW	6.5E-12	6.8E-12	2.6E-12	3.3E-12	4.1E-12	4.2E-12	3.4E-12
WNW	1.1E-11	1.2E-11	4.5E-12	5.7E-12	7.2E-12	7.4E-12	6.0E-12
W	1.3E-11	1.3E-11	4.7E-12	6.0E-12	7.7E-12	7.9E-12	6.3E-12
WSW	8.0E-12	8.3E-12	3.1E-12	3.9E-12	5.0E-12	5.1E-12	4.1E-12
SW	5.1E-12	5.3E-12	2.0E-12	2.5E-12	3.2E-12	3.3E-12	2.7E-12
SSW	6.1E-12	6.4E-12	2.5E-12	3.1E-12	4.0E-12	4.0E-12	3.3E-12
S	7.0E-12	7.2E-12	4.6E-12	5.0E-12	5.4E-12	5.5E-12	5.1E-12
SSE	2.0E-11	2.0E-11	8.4E-12	1.0E-11	1.3E-11	1.3E-11	1.1E-11
SE	2.1E-11	2.2E-11	8.9E-12	1.1E-11	1.4E-11	1.4E-11	1.2E-11
ESE	2.0E-11	2.1E-11	8.2E-12	1.0E-11	1.3E-11	1.3E-11	1.1E-11
E	2.2E-11	2.3E-11	8.8E-12	1.1E-11	1.4E-11	1.4E-11	1.2E-11
ENE	2.2E-11	2.3E-11	8.7E-12	1.1E-11	1.4E-11	1.4E-11	1.2E-11
NE	1.4E-11	1.4E-11	5.3E-12	6.7E-12	8.5E-12	8.7E-12	7.0E-12
NNE	9.6E-12	1.0E-11	3.7E-12	4.7E-12	6.0E-12	6.1E-12	4.9E-12

	Distance (m)						
Direction	1501	1537	1686	1683	1687	1583	1572
N	2.7E-12	2.6E-12	2.3E-12	2.3E-12	2.3E-12	2.5E-12	2.5E-12
NNW	2.8E-12	2.7E-12	2.4E-12	2.4E-12	2.4E-12	2.6E-12	2.7E-12
NW	3.2E-12	3.1E-12	2.7E-12	2.7E-12	2.7E-12	2.9E-12	3.0E-12
WNW	5.5E-12	5.3E-12	4.6E-12	4.6E-12	4.6E-12	5.1E-12	5.1E-12
W	5.8E-12	5.6E-12	4.9E-12	4.9E-12	4.9E-12	5.4E-12	5.4E-12
WSW	3.8E-12	3.6E-12	3.2E-12	3.2E-12	3.2E-12	3.5E-12	3.5E-12
SW	2.5E-12	2.4E-12	2.1E-12	2.1E-12	2.1E-12	2.3E-12	2.3E-12
SSW	3.0E-12	2.9E-12	2.6E-12	2.6E-12	2.6E-12	2.8E-12	2.8E-12
S	4.9E-12	4.8E-12	4.6E-12	4.6E-12	4.6E-12	4.8E-12	4.8E-12
SSE	1.0E-11	9.8E-12	8.6E-12	8.6E-12	8.6E-12	9.4E-12	9.5E-12
SE	1.1E-11	1.0E-11	9.2E-12	9.2E-12	9.1E-12	1.0E-11	1.0E-11
ESE	1.0E-11	9.7E-12	8.4E-12	8.5E-12	8.4E-12	9.3E-12	9.4E-12
E	1.1E-11	1.0E-11	9.0E-12	9.0E-12	9.0E-12	9.9E-12	1.0E-11
ENE	1.1E-11	1.0E-11	8.9E-12	8.9E-12	8.9E-12	9.8E-12	9.9E-12
NE	6.4E-12	6.2E-12	5.4E-12	5.4E-12	5.4E-12	5.9E-12	6.0E-12
NNE	4.5E-12	4.3E-12	3.8E-12	3.8E-12	3.8E-12	4.2E-12	4.2E-12

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

	Distance (m)					
Direction	2137	1607	1248	1218	1459	1345
N	1.6E-12	2.5E-12	3.5E-12	3.7E-12	2.8E-12	3.2E-12
NNW	1.7E-12	2.6E-12	3.7E-12	3.9E-12	3.0E-12	3.3E-12
NW	1.9E-12	2.9E-12	4.1E-12	4.3E-12	3.3E-12	3.7E-12
WNW	3.2E-12	5.0E-12	7.2E-12	7.4E-12	5.7E-12	6.5E-12
W	3.3E-12	5.2E-12	7.7E-12	8.0E-12	6.1E-12	6.9E-12
WSW	2.2E-12	3.4E-12	4.9E-12	5.1E-12	3.9E-12	4.4E-12
SW	1.5E-12	2.2E-12	3.2E-12	3.3E-12	2.6E-12	2.9E-12
SSW	1.8E-12	2.8E-12	3.9E-12	4.1E-12	3.2E-12	3.6E-12
S	3.9E-12	4.7E-12	5.4E-12	5.5E-12	5.0E-12	5.2E-12
SSE	6.0E-12	9.2E-12	1.3E-11	1.3E-11	1.1E-11	1.2E-11
SE	6.4E-12	9.8E-12	1.4E-11	1.4E-11	1.1E-11	1.3E-11
ESE	5.9E-12	9.1E-12	1.3E-11	1.3E-11	1.0E-11	1.2E-11
E	6.3E-12	9.7E-12	1.4E-11	1.4E-11	1.1E-11	1.3E-11
ENE	6.1E-12	9.6E-12	1.4E-11	1.4E-11	1.1E-11	1.2E-11
NE	3.7E-12	5.8E-12	8.5E-12	8.8E-12	6.7E-12	7.6E-12
NNE	2.6E-12	4.1E-12	5.9E-12	6.1E-12	4.7E-12	5.3E-12

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
Jun 12, 1995 7:54 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

1.70E-06

At This Location: 890 Meters East Northeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Plant 20, WATER PLANT LAB HOODS

Dataset Name: 94-WTRPLT-(I)-G2
Dataset Date: Jun 12, 1995 7:50 am
Wind File: WNDFILES\WIND94.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 890 Meters East Northeast
Lifetime Fatal Cancer Risk: 2.22E-11

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	4.95E-09
BREAST	5.66E-09
R MAR	1.22E-07
LUNGS	1.33E-05
THYROID	4.81E-09
ENDOST	1.68E-06
RMNDR	1.35E-07
EFFEC	1.70E-06

RADIONUCLIDE EMISSIONS DURING THE YEAR 1994

Nuclide	Class	Size	Source #1 Ci/y	Source #2 Ci/y	TOTAL Ci/y
U-234	Y	1.00	1.4E-09	1.4E-09	2.8E-09
U-235	Y	1.00	7.6E-11	7.6E-11	1.5E-10
U-236	Y	1.00	5.2E-11	5.2E-11	1.0E-10
U-238	Y	1.00	1.9E-09	1.9E-09	3.8E-09
RA-226	W	1.00	1.3E-12	1.3E-12	2.5E-12
RA-228	W	1.00	5.1E-12	5.1E-12	1.0E-11
TH-228	Y	1.00	5.4E-11	5.4E-11	1.1E-10
TH-230	Y	1.00	3.8E-12	3.8E-12	7.6E-12
TH-232	Y	1.00	8.5E-12	8.5E-12	1.7E-11
TH-234	Y	1.00	7.9E-09	7.9E-09	1.6E-08

SITE INFORMATION

Temperature:	12 degrees C
Precipitation:	98 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	7.87E+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	1665	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
Jun 12, 1995 7:54 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Plant 20, WATER PLANT LAB HOODS

Dataset Name: 94-WTRPLT-(I)-G2
Dataset Date: Jun 12, 1995 7:50 am
Wind File: WNDFILES\WIND94.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	4.95E-09
BREAST	5.66E-09
R MAR	1.22E-07
LUNGS	1.33E-05
THYROID	4.81E-09
ENDOST	1.68E-06
RMNDR	1.35E-07
EFFEC	1.70E-06

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	9.52E-08
INHALATION	1.60E-06
AIR IMMERSION	1.60E-13
GROUND SURFACE	9.97E-10
INTERNAL	1.70E-06
EXTERNAL	9.97E-10
TOTAL	1.70E-06

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	7.20E-07
U-235	3.66E-08
U-236	2.50E-08
U-238	8.49E-07
RA-226	8.54E-11
RA-228	1.36E-10
TH-228	4.99E-08
TH-230	3.49E-09
TH-232	1.12E-08
TH-234	2.30E-09
TOTAL	1.70E-06

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	1.36E-13
BONE	8.93E-14
THYROID	1.12E-15
BREAST	1.28E-14
LUNG	2.17E-11
STOMACH	8.70E-15
BOWEL	2.54E-14
LIVER	8.05E-15
PANCREAS	4.90E-15
URINARY	2.80E-13
OTHER	5.99E-15
TOTAL	2.22E-11

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	5.12E-13
INHALATION	2.17E-11
AIR IMMERSION	3.56E-18
GROUND SURFACE	2.29E-14
INTERNAL	2.22E-11
EXTERNAL	2.29E-14
TOTAL	2.22E-11

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	9.27E-12
U-235	4.81E-13
U-236	3.21E-13
U-238	1.10E-11
RA-226	1.15E-15
RA-228	1.40E-15
TH-228	9.99E-13
TH-230	2.86E-14
TH-232	6.32E-14
TH-234	7.42E-14
TOTAL	2.22E-11

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

	Distance (m)						
Direction	890	1209	2052	1834	2397	2438	2485
N	4.3E-07	2.9E-07	1.3E-07	1.6E-07	1.1E-07	1.0E-07	1.0E-07
NNW	4.6E-07	3.0E-07	1.4E-07	1.6E-07	1.1E-07	1.1E-07	1.0E-07
NW	5.0E-07	3.3E-07	1.5E-07	1.8E-07	1.2E-07	1.2E-07	1.2E-07
WNW	8.5E-07	5.7E-07	2.7E-07	3.2E-07	2.1E-07	2.0E-07	2.0E-07
W	9.7E-07	6.2E-07	2.8E-07	3.3E-07	2.2E-07	2.1E-07	2.0E-07
WSW	6.1E-07	4.0E-07	1.8E-07	2.2E-07	1.4E-07	1.4E-07	1.4E-07
SW	3.9E-07	2.6E-07	1.2E-07	1.4E-07	9.8E-08	9.5E-08	9.3E-08
SSW	4.7E-07	3.2E-07	1.5E-07	1.8E-07	1.2E-07	1.2E-07	1.1E-07
S	5.4E-07	4.3E-07	3.1E-07	3.4E-07	2.8E-07	2.8E-07	2.7E-07
SSE	1.5E-06	1.0E-06	4.9E-07	5.8E-07	3.9E-07	3.8E-07	3.7E-07
SE	1.6E-06	1.1E-06	5.2E-07	6.2E-07	4.1E-07	4.0E-07	3.9E-07
ESE	1.5E-06	1.0E-06	4.8E-07	5.7E-07	3.8E-07	3.7E-07	3.6E-07
E	1.7E-06	1.1E-06	5.1E-07	6.1E-07	4.0E-07	3.9E-07	3.8E-07
ENE	1.7E-06	1.1E-06	5.0E-07	6.0E-07	4.0E-07	3.8E-07	3.7E-07
NE	1.0E-06	6.8E-07	3.1E-07	3.6E-07	2.4E-07	2.3E-07	2.3E-07
NNE	7.3E-07	4.8E-07	2.2E-07	2.6E-07	1.7E-07	1.7E-07	1.6E-07

	Distance (m)						
Direction	1314	1665	2160	2217	1387	2496	1490
N	2.6E-07	1.8E-07	1.2E-07	1.2E-07	2.4E-07	1.0E-07	2.1E-07
NNW	2.7E-07	1.9E-07	1.3E-07	1.2E-07	2.5E-07	1.0E-07	2.2E-07
NW	3.0E-07	2.1E-07	1.4E-07	1.4E-07	2.7E-07	1.2E-07	2.5E-07
WNW	5.1E-07	3.6E-07	2.5E-07	2.4E-07	4.7E-07	2.0E-07	4.3E-07
W	5.5E-07	3.8E-07	2.5E-07	2.4E-07	5.0E-07	2.0E-07	4.5E-07
WSW	3.5E-07	2.5E-07	1.7E-07	1.6E-07	3.3E-07	1.4E-07	2.9E-07
SW	2.3E-07	1.7E-07	1.1E-07	1.1E-07	2.1E-07	9.2E-08	1.9E-07
SSW	2.8E-07	2.0E-07	1.4E-07	1.3E-07	2.6E-07	1.1E-07	2.4E-07
S	4.1E-07	3.6E-07	3.0E-07	3.0E-07	3.9E-07	2.7E-07	3.8E-07
SSE	9.3E-07	6.7E-07	4.5E-07	4.4E-07	8.6E-07	3.6E-07	7.8E-07
SE	1.0E-06	7.1E-07	4.8E-07	4.7E-07	9.2E-07	3.9E-07	8.4E-07
ESE	9.2E-07	6.6E-07	4.4E-07	4.3E-07	8.6E-07	3.6E-07	7.7E-07
E	9.9E-07	7.0E-07	4.7E-07	4.5E-07	9.2E-07	3.8E-07	8.3E-07
ENE	9.9E-07	7.0E-07	4.6E-07	4.5E-07	9.1E-07	3.7E-07	8.2E-07
NE	6.0E-07	4.2E-07	2.8E-07	2.7E-07	5.6E-07	2.3E-07	5.0E-07
NNE	4.2E-07	3.0E-07	2.0E-07	1.9E-07	3.9E-07	1.6E-07	3.5E-07

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

	Distance (m)					
Direction	1711	1806	1766	2135	2164	1451
N	1.7E-07	1.6E-07	1.7E-07	1.3E-07	1.2E-07	2.2E-07
NNW	1.8E-07	1.7E-07	1.7E-07	1.3E-07	1.3E-07	2.3E-07
NW	2.0E-07	1.9E-07	1.9E-07	1.5E-07	1.4E-07	2.6E-07
WNW	3.5E-07	3.2E-07	3.3E-07	2.5E-07	2.5E-07	4.4E-07
W	3.7E-07	3.4E-07	3.5E-07	2.6E-07	2.5E-07	4.7E-07
WSW	2.4E-07	2.2E-07	2.3E-07	1.7E-07	1.7E-07	3.1E-07
SW	1.6E-07	1.5E-07	1.5E-07	1.2E-07	1.1E-07	2.0E-07
SSW	2.0E-07	1.8E-07	1.9E-07	1.4E-07	1.4E-07	2.5E-07
S	3.5E-07	3.4E-07	3.4E-07	3.1E-07	3.0E-07	3.8E-07
SSE	6.4E-07	5.9E-07	6.1E-07	4.6E-07	4.5E-07	8.1E-07
SE	6.9E-07	6.3E-07	6.5E-07	4.9E-07	4.8E-07	8.7E-07
ESE	6.3E-07	5.8E-07	6.0E-07	4.5E-07	4.4E-07	8.0E-07
E	6.8E-07	6.2E-07	6.4E-07	4.8E-07	4.7E-07	8.6E-07
ENE	6.7E-07	6.1E-07	6.4E-07	4.7E-07	4.6E-07	8.5E-07
NE	4.1E-07	3.7E-07	3.9E-07	2.9E-07	2.8E-07	5.2E-07
NNE	2.9E-07	2.6E-07	2.7E-07	2.0E-07	2.0E-07	3.7E-07

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

Direction	Distance (m) 890	1209	2052	1834	2397	2438	2485
N	5.6E-12	3.7E-12	1.7E-12	2.0E-12	1.3E-12	1.3E-12	1.3E-12
NNW	6.0E-12	3.9E-12	1.8E-12	2.1E-12	1.4E-12	1.3E-12	1.3E-12
NW	6.5E-12	4.3E-12	2.0E-12	2.3E-12	1.5E-12	1.5E-12	1.5E-12
WNW	1.1E-11	7.5E-12	3.4E-12	4.1E-12	2.7E-12	2.6E-12	2.5E-12
W	1.3E-11	8.0E-12	3.5E-12	4.2E-12	2.8E-12	2.7E-12	2.6E-12
WSW	7.9E-12	5.2E-12	2.3E-12	2.8E-12	1.8E-12	1.8E-12	1.7E-12
SW	5.0E-12	3.3E-12	1.5E-12	1.8E-12	1.2E-12	1.2E-12	1.1E-12
SSW	6.1E-12	4.1E-12	1.9E-12	2.2E-12	1.5E-12	1.5E-12	1.4E-12
S	7.0E-12	5.5E-12	4.0E-12	4.4E-12	3.6E-12	3.5E-12	3.5E-12
SSE	2.0E-11	1.4E-11	6.4E-12	7.5E-12	5.0E-12	4.9E-12	4.7E-12
SE	2.1E-11	1.5E-11	6.8E-12	8.1E-12	5.3E-12	5.2E-12	5.0E-12
ESE	2.0E-11	1.4E-11	6.2E-12	7.4E-12	4.9E-12	4.8E-12	4.6E-12
E	2.2E-11	1.5E-11	6.6E-12	7.9E-12	5.2E-12	5.1E-12	4.9E-12
ENE	2.2E-11	1.5E-11	6.5E-12	7.8E-12	5.1E-12	5.0E-12	4.8E-12
NE	1.4E-11	8.8E-12	3.9E-12	4.7E-12	3.1E-12	3.0E-12	2.9E-12
NNE	9.5E-12	6.2E-12	2.8E-12	3.3E-12	2.2E-12	2.1E-12	2.0E-12

Direction	Distance (m) 1314	1665	2160	2217	1387	2496	1490
N	3.3E-12	2.3E-12	1.6E-12	1.5E-12	3.0E-12	1.2E-12	2.7E-12
NNW	3.4E-12	2.4E-12	1.6E-12	1.6E-12	3.2E-12	1.3E-12	2.9E-12
NW	3.8E-12	2.7E-12	1.8E-12	1.7E-12	3.5E-12	1.4E-12	3.2E-12
WNW	6.7E-12	4.7E-12	3.2E-12	3.0E-12	6.2E-12	2.5E-12	5.5E-12
W	7.1E-12	4.9E-12	3.3E-12	3.1E-12	6.5E-12	2.6E-12	5.9E-12
WSW	4.6E-12	3.2E-12	2.1E-12	2.1E-12	4.2E-12	1.7E-12	3.8E-12
SW	3.0E-12	2.1E-12	1.4E-12	1.4E-12	2.7E-12	1.1E-12	2.5E-12
SSW	3.7E-12	2.6E-12	1.8E-12	1.7E-12	3.4E-12	1.4E-12	3.1E-12
S	5.3E-12	4.6E-12	3.9E-12	3.8E-12	5.1E-12	3.5E-12	4.9E-12
SSE	1.2E-11	8.7E-12	5.9E-12	5.7E-12	1.1E-11	4.7E-12	1.0E-11
SE	1.3E-11	9.3E-12	6.3E-12	6.0E-12	1.2E-11	5.0E-12	1.1E-11
ESE	1.2E-11	8.6E-12	5.8E-12	5.5E-12	1.1E-11	4.6E-12	1.0E-11
E	1.3E-11	9.2E-12	6.1E-12	5.9E-12	1.2E-11	4.9E-12	1.1E-11
ENE	1.3E-11	9.1E-12	6.0E-12	5.8E-12	1.2E-11	4.8E-12	1.1E-11
NE	7.8E-12	5.5E-12	3.6E-12	3.5E-12	7.2E-12	2.9E-12	6.5E-12
NNE	5.5E-12	3.8E-12	2.6E-12	2.5E-12	5.1E-12	2.0E-12	4.5E-12

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

	Distance (m)					
Direction	1711	1806	1766	2135	2164	1451
N	2.2E-12	2.0E-12	2.1E-12	1.6E-12	1.6E-12	2.8E-12
NNW	2.3E-12	2.1E-12	2.2E-12	1.6E-12	1.6E-12	3.0E-12
NW	2.6E-12	2.4E-12	2.5E-12	1.8E-12	1.8E-12	3.3E-12
WNW	4.5E-12	4.2E-12	4.3E-12	3.2E-12	3.1E-12	5.8E-12
W	4.7E-12	4.3E-12	4.5E-12	3.3E-12	3.3E-12	6.1E-12
WSW	3.1E-12	2.8E-12	2.9E-12	2.2E-12	2.1E-12	3.9E-12
SW	2.0E-12	1.9E-12	1.9E-12	1.4E-12	1.4E-12	2.6E-12
SSW	2.5E-12	2.3E-12	2.4E-12	1.8E-12	1.7E-12	3.2E-12
S	4.5E-12	4.4E-12	4.5E-12	3.9E-12	3.9E-12	5.0E-12
SSE	8.4E-12	7.7E-12	8.0E-12	6.0E-12	5.9E-12	1.1E-11
SE	8.9E-12	8.2E-12	8.5E-12	6.4E-12	6.3E-12	1.1E-11
ESE	8.2E-12	7.6E-12	7.9E-12	5.9E-12	5.8E-12	1.0E-11
E	8.8E-12	8.1E-12	8.4E-12	6.2E-12	6.1E-12	1.1E-11
ENE	8.7E-12	8.0E-12	8.3E-12	6.1E-12	6.0E-12	1.1E-11
NE	5.2E-12	4.8E-12	5.0E-12	3.7E-12	3.6E-12	6.7E-12
NNE	3.7E-12	3.4E-12	3.5E-12	2.6E-12	2.5E-12	4.7E-12

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 3, 1995 11:38 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

4.03E-03

At This Location: 929 Meters East Northeast

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Building 53, H&S Lab Hoods (Z006)

Dataset Name: 94-H&SLAB-(I)-G1
Dataset Date: May 3, 1995 11:36 am
Wind File: WNDFILES\WIND94.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 929 Meters East Northeast
Lifetime Fatal Cancer Risk: 5.13E-08

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	1.24E-05
BREAST	1.40E-05
R MAR	5.50E-04
LUNGS	3.04E-02
THYROID	1.21E-05
ENDOST	7.27E-03
RMNDR	3.20E-04
EFFEC	4.03E-03

RADIONUCLIDE EMISSIONS DURING THE YEAR 1994

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	1.00	7.8E-06	7.8E-06
U-235	Y	1.00	4.1E-07	4.1E-07
U-236	Y	1.00	3.0E-07	3.0E-07
U-238	Y	1.00	8.7E-06	8.7E-06
RA-226	W	1.00	5.5E-09	5.5E-09
RA-228	W	1.00	2.2E-08	2.2E-08
TH-228	Y	1.00	2.3E-07	2.3E-07
TH-230	Y	1.00	6.9E-07	6.9E-07
TH-232	Y	1.00	3.7E-08	3.7E-08
TH-234	Y	1.00	3.4E-05	3.4E-05

SITE INFORMATION

Temperature:	12 degrees C
Precipitation:	98 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

1375	1358	2166	1826	1534	1169	1167	1188	1214	1312
1296	1241	1095	1077	1637	1132	929	930	1625	1682

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 3, 1995 11:38 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Building 53, H&S Lab Hoods (Z006)

Dataset Name: 94-H&SLAB-(I)-G1
Dataset Date: May 3, 1995 11:36 am
Wind File: WNDFILES\WIND94.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	1.24E-05
BREAST	1.40E-05
R MAR	5.50E-04
LUNGS	3.04E-02
THYROID	1.21E-05
ENDOST	7.27E-03
RMNDR	3.20E-04
EFFEC	4.03E-03

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	2.30E-04
INHALATION	3.80E-03
AIR IMMERSION	3.18E-10
GROUND SURFACE	2.39E-06
INTERNAL	4.03E-03
EXTERNAL	2.39E-06
TOTAL	4.03E-03

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	1.74E-03
U-235	8.77E-05
U-236	6.42E-05
U-238	1.73E-03
RA-226	1.70E-07
RA-228	2.73E-07
TH-228	9.53E-05
TH-230	2.80E-04
TH-232	2.15E-05
TH-234	4.57E-06
TOTAL	4.03E-03

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	5.40E-10
BONE	3.57E-10
THYROID	2.76E-12
BREAST	3.10E-11
LUNG	4.95E-08
STOMACH	2.09E-11
BOWEL	5.54E-11
LIVER	2.53E-11
PANCREAS	1.21E-11
URINARY	6.66E-10
OTHER	1.48E-11
TOTAL	5.13E-08

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	1.22E-09
INHALATION	5.00E-08
AIR IMMERSION	7.10E-15
GROUND SURFACE	5.50E-11
INTERNAL	5.12E-08
EXTERNAL	5.50E-11
TOTAL	5.13E-08

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	2.24E-08
U-235	1.15E-09
U-236	8.24E-10
U-238	2.24E-08
RA-226	2.23E-12
RA-228	2.78E-12
TH-228	1.91E-09
TH-230	2.29E-09
TH-232	1.21E-10
TH-234	1.44E-10
TOTAL	5.13E-08

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

	Distance (m)						
Direction	1375	1358	2166	1826	1534	1169	1167
N	6.3E-04	6.4E-04	3.4E-04	4.3E-04	5.4E-04	7.8E-04	7.8E-04
NNW	6.7E-04	6.8E-04	3.5E-04	4.5E-04	5.7E-04	8.3E-04	8.3E-04
NW	7.4E-04	7.5E-04	3.9E-04	5.0E-04	6.4E-04	9.2E-04	9.2E-04
WNW	1.3E-03	1.3E-03	6.6E-04	8.5E-04	1.1E-03	1.6E-03	1.6E-03
W	1.3E-03	1.4E-03	6.8E-04	8.8E-04	1.1E-03	1.7E-03	1.7E-03
WSW	8.8E-04	8.9E-04	4.6E-04	5.9E-04	7.5E-04	1.1E-03	1.1E-03
SW	5.8E-04	5.9E-04	3.1E-04	3.9E-04	5.0E-04	7.1E-04	7.1E-04
SSW	7.1E-04	7.2E-04	3.8E-04	4.8E-04	6.1E-04	8.7E-04	8.7E-04
S	9.3E-04	9.4E-04	7.4E-04	8.1E-04	8.8E-04	1.0E-03	1.0E-03
SSE	2.3E-03	2.3E-03	1.2E-03	1.5E-03	2.0E-03	2.8E-03	2.8E-03
SE	2.4E-03	2.5E-03	1.3E-03	1.7E-03	2.1E-03	3.0E-03	3.0E-03
ESE	2.3E-03	2.3E-03	1.2E-03	1.5E-03	1.9E-03	2.8E-03	2.8E-03
E	2.4E-03	2.5E-03	1.3E-03	1.6E-03	2.1E-03	3.0E-03	3.0E-03
ENE	2.4E-03	2.4E-03	1.2E-03	1.6E-03	2.1E-03	3.0E-03	3.0E-03
NE	1.5E-03	1.5E-03	7.6E-04	9.8E-04	1.3E-03	1.9E-03	1.9E-03
NNE	1.0E-03	1.0E-03	5.3E-04	6.9E-04	8.8E-04	1.3E-03	1.3E-03

	Distance (m)						
Direction	1188	1214	1312	1296	1241	1095	1077
N	7.6E-04	7.4E-04	6.7E-04	6.8E-04	7.2E-04	8.5E-04	8.6E-04
NNW	8.1E-04	7.9E-04	7.1E-04	7.2E-04	7.7E-04	9.0E-04	9.2E-04
NW	9.0E-04	8.7E-04	7.9E-04	8.0E-04	8.5E-04	1.0E-03	1.0E-03
WNW	1.5E-03	1.5E-03	1.3E-03	1.4E-03	1.4E-03	1.7E-03	1.7E-03
W	1.6E-03	1.6E-03	1.4E-03	1.5E-03	1.5E-03	1.8E-03	1.9E-03
WSW	1.1E-03	1.0E-03	9.4E-04	9.5E-04	1.0E-03	1.2E-03	1.2E-03
SW	7.0E-04	6.8E-04	6.1E-04	6.2E-04	6.6E-04	7.7E-04	7.9E-04
SSW	8.5E-04	8.3E-04	7.5E-04	7.6E-04	8.1E-04	9.4E-04	9.6E-04
S	1.0E-03	1.0E-03	9.6E-04	9.6E-04	9.9E-04	1.1E-03	1.1E-03
SSE	2.7E-03	2.7E-03	2.4E-03	2.5E-03	2.6E-03	3.0E-03	3.1E-03
SE	2.9E-03	2.9E-03	2.6E-03	2.6E-03	2.8E-03	3.3E-03	3.3E-03
ESE	2.7E-03	2.7E-03	2.4E-03	2.5E-03	2.6E-03	3.0E-03	3.1E-03
E	3.0E-03	2.9E-03	2.6E-03	2.6E-03	2.8E-03	3.3E-03	3.4E-03
ENE	2.9E-03	2.9E-03	2.6E-03	2.6E-03	2.8E-03	3.3E-03	3.3E-03
NE	1.8E-03	1.8E-03	1.6E-03	1.6E-03	1.7E-03	2.0E-03	2.1E-03
NNE	1.3E-03	1.2E-03	1.1E-03	1.1E-03	1.2E-03	1.4E-03	1.4E-03

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

	Distance (m)					
Direction	1637	1132	929	930	1625	1682
N	5.0E-04	8.1E-04	1.0E-03	1.0E-03	5.0E-04	4.8E-04
NNW	5.2E-04	8.7E-04	1.1E-03	1.1E-03	5.3E-04	5.0E-04
NW	5.8E-04	9.6E-04	1.2E-03	1.2E-03	5.9E-04	5.6E-04
WNW	9.9E-04	1.6E-03	2.1E-03	2.1E-03	1.0E-03	9.5E-04
W	1.0E-03	1.8E-03	2.3E-03	2.3E-03	1.0E-03	1.0E-03
WSW	6.9E-04	1.1E-03	1.5E-03	1.5E-03	6.9E-04	6.6E-04
SW	4.6E-04	7.4E-04	9.5E-04	9.5E-04	4.6E-04	4.4E-04
SSW	5.6E-04	9.1E-04	1.1E-03	1.1E-03	5.6E-04	5.4E-04
S	8.6E-04	1.0E-03	1.2E-03	1.2E-03	8.6E-04	8.5E-04
SSE	1.8E-03	2.9E-03	3.6E-03	3.6E-03	1.8E-03	1.7E-03
SE	1.9E-03	3.1E-03	3.9E-03	3.9E-03	1.9E-03	1.9E-03
ESE	1.8E-03	2.9E-03	3.7E-03	3.7E-03	1.8E-03	1.7E-03
E	1.9E-03	3.1E-03	4.0E-03	4.0E-03	1.9E-03	1.8E-03
ENE	1.9E-03	3.1E-03	4.0E-03	4.0E-03	1.9E-03	1.8E-03
NE	1.1E-03	1.9E-03	2.5E-03	2.5E-03	1.2E-03	1.1E-03
NNE	8.0E-04	1.3E-03	1.7E-03	1.7E-03	8.1E-04	7.7E-04

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

	Distance (m)						
Direction	1375	1358	2166	1826	1534	1169	1167
N	7.8E-09	7.9E-09	4.0E-09	5.2E-09	6.7E-09	9.7E-09	9.7E-09
NNW	8.2E-09	8.4E-09	4.2E-09	5.4E-09	7.0E-09	1.0E-08	1.0E-08
NW	9.2E-09	9.3E-09	4.7E-09	6.1E-09	7.9E-09	1.1E-08	1.1E-08
WNW	1.6E-08	1.6E-08	8.1E-09	1.1E-08	1.4E-08	2.0E-08	2.0E-08
W	1.7E-08	1.7E-08	8.4E-09	1.1E-08	1.4E-08	2.1E-08	2.1E-08
WSW	1.1E-08	1.1E-08	5.6E-09	7.2E-09	9.3E-09	1.4E-08	1.4E-08
SW	7.1E-09	7.2E-09	3.7E-09	4.7E-09	6.1E-09	8.9E-09	8.9E-09
SSW	8.8E-09	8.9E-09	4.6E-09	5.9E-09	7.5E-09	1.1E-08	1.1E-08
S	1.2E-08	1.2E-08	9.2E-09	1.0E-08	1.1E-08	1.3E-08	1.3E-08
SSE	2.9E-08	2.9E-08	1.5E-08	1.9E-08	2.5E-08	3.6E-08	3.6E-08
SE	3.1E-08	3.2E-08	1.6E-08	2.1E-08	2.7E-08	3.8E-08	3.8E-08
ESE	2.9E-08	2.9E-08	1.5E-08	1.9E-08	2.5E-08	3.6E-08	3.6E-08
E	3.1E-08	3.1E-08	1.6E-08	2.0E-08	2.6E-08	3.8E-08	3.8E-08
ENE	3.0E-08	3.1E-08	1.5E-08	2.0E-08	2.6E-08	3.8E-08	3.8E-08
NE	1.9E-08	1.9E-08	9.4E-09	1.2E-08	1.6E-08	2.3E-08	2.3E-08
NNE	1.3E-08	1.3E-08	6.6E-09	8.5E-09	1.1E-08	1.6E-08	1.6E-08

	Distance (m)						
Direction	1188	1214	1312	1296	1241	1095	1077
N	9.5E-09	9.2E-09	8.3E-09	8.4E-09	9.0E-09	1.1E-08	1.1E-08
NNW	1.0E-08	9.8E-09	8.8E-09	9.0E-09	9.5E-09	1.1E-08	1.2E-08
NW	1.1E-08	1.1E-08	9.8E-09	1.0E-08	1.1E-08	1.2E-08	1.3E-08
WNW	1.9E-08	1.9E-08	1.7E-08	1.7E-08	1.8E-08	2.1E-08	2.2E-08
W	2.1E-08	2.0E-08	1.8E-08	1.8E-08	2.0E-08	2.3E-08	2.4E-08
WSW	1.3E-08	1.3E-08	1.2E-08	1.2E-08	1.3E-08	1.5E-08	1.5E-08
SW	8.7E-09	8.4E-09	7.6E-09	7.7E-09	8.2E-09	9.6E-09	9.8E-09
SSW	1.1E-08	1.0E-08	9.3E-09	9.5E-09	1.0E-08	1.2E-08	1.2E-08
S	1.3E-08	1.2E-08	1.2E-08	1.2E-08	1.2E-08	1.3E-08	1.3E-08
SSE	3.5E-08	3.4E-08	3.1E-08	3.1E-08	3.3E-08	3.8E-08	3.9E-08
SE	3.7E-08	3.6E-08	3.3E-08	3.3E-08	3.5E-08	4.1E-08	4.2E-08
ESE	3.5E-08	3.4E-08	3.1E-08	3.1E-08	3.3E-08	3.9E-08	3.9E-08
E	3.8E-08	3.6E-08	3.3E-08	3.3E-08	3.5E-08	4.2E-08	4.3E-08
ENE	3.7E-08	3.6E-08	3.3E-08	3.3E-08	3.5E-08	4.2E-08	4.2E-08
NE	2.3E-08	2.2E-08	2.0E-08	2.0E-08	2.2E-08	2.6E-08	2.6E-08
NNE	1.6E-08	1.5E-08	1.4E-08	1.4E-08	1.5E-08	1.8E-08	1.8E-08

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

	Distance (m)					
Direction	1637	1132	929	930	1625	1682
N	6.1E-09	1.0E-08	1.3E-08	1.3E-08	6.2E-09	5.9E-09
NNW	6.4E-09	1.1E-08	1.4E-08	1.4E-08	6.5E-09	6.2E-09
NW	7.1E-09	1.2E-08	1.5E-08	1.5E-08	7.2E-09	6.9E-09
WNW	1.2E-08	2.1E-08	2.6E-08	2.6E-08	1.3E-08	1.2E-08
W	1.3E-08	2.2E-08	2.9E-08	2.9E-08	1.3E-08	1.2E-08
WSW	8.5E-09	1.4E-08	1.9E-08	1.9E-08	8.6E-09	8.1E-09
SW	5.6E-09	9.2E-09	1.2E-08	1.2E-08	5.6E-09	5.3E-09
SSW	6.9E-09	1.1E-08	1.4E-08	1.4E-08	6.9E-09	6.6E-09
S	1.1E-08	1.3E-08	1.5E-08	1.5E-08	1.1E-08	1.1E-08
SSE	2.3E-08	3.7E-08	4.6E-08	4.6E-08	2.3E-08	2.2E-08
SE	2.4E-08	4.0E-08	5.0E-08	5.0E-08	2.5E-08	2.3E-08
ESE	2.2E-08	3.7E-08	4.7E-08	4.7E-08	2.3E-08	2.2E-08
E	2.4E-08	4.0E-08	5.1E-08	5.1E-08	2.4E-08	2.3E-08
ENE	2.4E-08	4.0E-08	5.1E-08	5.1E-08	2.4E-08	2.3E-08
NE	1.4E-08	2.4E-08	3.2E-08	3.2E-08	1.5E-08	1.4E-08
NNE	1.0E-08	1.7E-08	2.2E-08	2.2E-08	1.0E-08	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
May 3, 1995 11:39 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Effective Dose Equivalent
(mrem/year)

2.88E-03

At This Location: 1209 Meters East

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Building 53, H&S Lab Hoods (Z006)

Dataset Name: 94-H&SLAB-(I)-G2
Dataset Date: May 3, 1995 11:38 am
Wind File: WNDFILES\WIND94.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 1209 Meters East
Lifetime Fatal Cancer Risk: 3.66E-08

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	8.72E-06
BREAST	9.91E-06
R MAR	3.89E-04
LUNGS	2.17E-02
THYROID	8.49E-06
ENDOST	5.14E-03
RMNDR	2.24E-04
EFFEC	2.88E-03

RADIONUCLIDE EMISSIONS DURING THE YEAR 1994

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	1.00	7.8E-06	7.8E-06
U-235	Y	1.00	4.1E-07	4.1E-07
U-236	Y	1.00	3.0E-07	3.0E-07
U-238	Y	1.00	8.7E-06	8.7E-06
RA-226	W	1.00	5.5E-09	5.5E-09
RA-228	W	1.00	2.2E-08	2.2E-08
TH-228	Y	1.00	2.3E-07	2.3E-07
TH-230	Y	1.00	6.9E-07	6.9E-07
TH-232	Y	1.00	3.7E-08	3.7E-08
TH-234	Y	1.00	3.4E-05	3.4E-05

SITE INFORMATION

Temperature: 12 degrees C
Precipitation: 98 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

1335	1711	2263	1661	2384	2502	2039	1815	1209	2102
2173	1887	2562	1860	2158	2251	2206	1985	2018	1811

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 3, 1995 11:39 am

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 538704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45253-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1994

Comments: 1994 NESHAP Demonstration
LOCATION: Building 53, H&S Lab Hoods (Z006)

Dataset Name: 94-H&SLAB-(I)-G2
Dataset Date: May 3, 1995 11:38 am
Wind File: WNDFILES\WIND94.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	8.72E-06
BREAST	9.91E-06
R MAR	3.89E-04
LUNGS	2.17E-02
THYROID	8.49E-06
ENDOST	5.14E-03
RMNDR	2.24E-04
EFFEC	2.88E-03

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	1.61E-04
INHALATION	2.72E-03
AIR IMMERSION	2.28E-10
GROUND SURFACE	1.72E-06
INTERNAL	2.88E-03
EXTERNAL	1.72E-06
TOTAL	2.88E-03

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
U-234	1.24E-03
U-235	6.26E-05
U-236	4.58E-05
U-238	1.24E-03
RA-226	1.20E-07
RA-228	1.92E-07
TH-228	6.81E-05
TH-230	2.00E-04
TH-232	1.53E-05
TH-234	3.23E-06
TOTAL	2.88E-03

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	3.81E-10
BONE	2.52E-10
THYROID	1.95E-12
BREAST	2.20E-11
LUNG	3.54E-08
STOMACH	1.47E-11
BOWEL	3.89E-11
LIVER	1.80E-11
PANCREAS	8.55E-12
URINARY	4.65E-10
OTHER	1.05E-11
TOTAL	3.66E-08

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	8.52E-10
INHALATION	3.57E-08
AIR IMMERSION	5.07E-15
GROUND SURFACE	3.95E-11
INTERNAL	3.66E-08
EXTERNAL	3.95E-11
TOTAL	3.66E-08

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-234	1.60E-08
U-235	8.20E-10
U-236	5.89E-10
U-238	1.60E-08
RA-226	1.59E-12
RA-228	1.96E-12
TH-228	1.36E-09
TH-230	1.64E-09
TH-232	8.64E-11
TH-234	1.02E-10
TOTAL	3.66E-08

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

	Distance (m)						
Direction	1335	1711	2263	1661	2384	2502	2039
N	6.4E-04	4.5E-04	3.0E-04	4.7E-04	2.8E-04	2.6E-04	3.5E-04
NNW	6.8E-04	4.8E-04	3.1E-04	5.0E-04	2.9E-04	2.7E-04	3.7E-04
NW	7.5E-04	5.3E-04	3.5E-04	5.5E-04	3.3E-04	3.0E-04	4.1E-04
WNW	1.3E-03	9.1E-04	6.0E-04	9.5E-04	5.6E-04	5.2E-04	7.0E-04
W	1.4E-03	9.6E-04	6.2E-04	1.0E-03	5.7E-04	5.3E-04	7.3E-04
WSW	9.0E-04	6.3E-04	4.1E-04	6.6E-04	3.8E-04	3.6E-04	4.8E-04
SW	5.9E-04	4.1E-04	2.8E-04	4.3E-04	2.6E-04	2.4E-04	3.2E-04
SSW	7.2E-04	5.1E-04	3.4E-04	5.3E-04	3.2E-04	2.9E-04	4.0E-04
S	9.3E-04	8.2E-04	7.0E-04	8.4E-04	6.8E-04	6.6E-04	7.5E-04
SSE	2.4E-03	1.7E-03	1.1E-03	1.8E-03	1.0E-03	9.6E-04	1.3E-03
SE	2.5E-03	1.8E-03	1.2E-03	1.9E-03	1.1E-03	1.0E-03	1.4E-03
ESE	2.3E-03	1.7E-03	1.1E-03	1.7E-03	1.0E-03	9.4E-04	1.3E-03
E	2.5E-03	1.8E-03	1.2E-03	1.8E-03	1.1E-03	9.9E-04	1.4E-03
ENE	2.5E-03	1.7E-03	1.1E-03	1.8E-03	1.1E-03	9.7E-04	1.3E-03
NE	1.5E-03	1.1E-03	6.9E-04	1.1E-03	6.4E-04	5.9E-04	8.1E-04
NNE	1.1E-03	7.4E-04	4.9E-04	7.7E-04	4.5E-04	4.2E-04	5.7E-04

	Distance (m)						
Direction	1815	1209	2102	2173	1887	2562	1860
N	4.2E-04	7.3E-04	3.4E-04	3.2E-04	3.9E-04	2.5E-04	4.0E-04
NNW	4.4E-04	7.8E-04	3.5E-04	3.3E-04	4.1E-04	2.6E-04	4.2E-04
NW	4.9E-04	8.6E-04	3.9E-04	3.7E-04	4.6E-04	2.9E-04	4.7E-04
WNW	8.4E-04	1.5E-03	6.7E-04	6.4E-04	7.9E-04	5.0E-04	8.1E-04
W	8.7E-04	1.6E-03	7.0E-04	6.6E-04	8.2E-04	5.1E-04	8.4E-04
WSW	5.8E-04	1.0E-03	4.6E-04	4.4E-04	5.4E-04	3.4E-04	5.6E-04
SW	3.8E-04	6.7E-04	3.1E-04	2.9E-04	3.6E-04	2.3E-04	3.7E-04
SSW	4.7E-04	8.2E-04	3.8E-04	3.6E-04	4.4E-04	2.8E-04	4.5E-04
S	8.0E-04	9.9E-04	7.4E-04	7.2E-04	7.8E-04	6.5E-04	7.9E-04
SSE	1.5E-03	2.7E-03	1.2E-03	1.2E-03	1.5E-03	9.2E-04	1.5E-03
SE	1.7E-03	2.9E-03	1.3E-03	1.3E-03	1.6E-03	9.8E-04	1.6E-03
ESE	1.5E-03	2.7E-03	1.2E-03	1.2E-03	1.4E-03	9.0E-04	1.5E-03
E	1.6E-03	2.9E-03	1.3E-03	1.2E-03	1.5E-03	9.6E-04	1.6E-03
ENE	1.6E-03	2.9E-03	1.3E-03	1.2E-03	1.5E-03	9.4E-04	1.5E-03
NE	9.7E-04	1.8E-03	7.8E-04	7.4E-04	9.2E-04	5.7E-04	9.4E-04
NNE	6.8E-04	1.2E-03	5.4E-04	5.2E-04	6.4E-04	4.0E-04	6.5E-04

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

	Distance (m)					
Direction	2158	2251	2206	1985	2018	1811
N	3.2E-04	3.0E-04	3.1E-04	3.7E-04	3.6E-04	4.2E-04
NNW	3.4E-04	3.2E-04	3.3E-04	3.8E-04	3.7E-04	4.4E-04
NW	3.8E-04	3.5E-04	3.6E-04	4.3E-04	4.2E-04	4.9E-04
WNW	6.5E-04	6.1E-04	6.3E-04	7.3E-04	7.2E-04	8.4E-04
W	6.7E-04	6.3E-04	6.5E-04	7.6E-04	7.4E-04	8.8E-04
WSW	4.4E-04	4.2E-04	4.3E-04	5.0E-04	4.9E-04	5.8E-04
SW	3.0E-04	2.8E-04	2.9E-04	3.3E-04	3.3E-04	3.8E-04
SSW	3.6E-04	3.4E-04	3.5E-04	4.1E-04	4.0E-04	4.7E-04
S	7.3E-04	7.1E-04	7.2E-04	7.6E-04	7.6E-04	8.0E-04
SSE	1.2E-03	1.1E-03	1.2E-03	1.4E-03	1.3E-03	1.5E-03
SE	1.3E-03	1.2E-03	1.2E-03	1.4E-03	1.4E-03	1.7E-03
ESE	1.2E-03	1.1E-03	1.1E-03	1.3E-03	1.3E-03	1.5E-03
E	1.2E-03	1.2E-03	1.2E-03	1.4E-03	1.4E-03	1.6E-03
ENE	1.2E-03	1.1E-03	1.2E-03	1.4E-03	1.4E-03	1.6E-03
NE	7.5E-04	7.0E-04	7.2E-04	8.5E-04	8.3E-04	9.7E-04
NNE	5.2E-04	4.9E-04	5.1E-04	5.9E-04	5.8E-04	6.8E-04

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

	Distance (m)						
Direction	1335	1711	2263	1661	2384	2502	2039
N	8.0E-09	5.6E-09	3.7E-09	5.9E-09	3.4E-09	3.2E-09	4.3E-09
NNW	8.5E-09	5.9E-09	3.9E-09	6.2E-09	3.6E-09	3.3E-09	4.5E-09
NW	9.5E-09	6.6E-09	4.3E-09	6.9E-09	4.0E-09	3.7E-09	5.1E-09
WNW	1.6E-08	1.2E-08	7.5E-09	1.2E-08	7.0E-09	6.5E-09	8.8E-09
W	1.7E-08	1.2E-08	7.8E-09	1.3E-08	7.2E-09	6.6E-09	9.2E-09
WSW	1.1E-08	7.9E-09	5.1E-09	8.2E-09	4.7E-09	4.4E-09	6.0E-09
SW	7.3E-09	5.1E-09	3.4E-09	5.4E-09	3.1E-09	2.9E-09	4.0E-09
SSW	9.0E-09	6.4E-09	4.2E-09	6.6E-09	3.9E-09	3.6E-09	4.9E-09
S	1.2E-08	1.0E-08	8.8E-09	1.1E-08	8.5E-09	8.2E-09	9.4E-09
SSE	3.0E-08	2.1E-08	1.4E-08	2.2E-08	1.3E-08	1.2E-08	1.6E-08
SE	3.2E-08	2.3E-08	1.5E-08	2.4E-08	1.4E-08	1.3E-08	1.8E-08
ESE	3.0E-08	2.1E-08	1.4E-08	2.2E-08	1.3E-08	1.2E-08	1.6E-08
E	3.2E-08	2.2E-08	1.5E-08	2.3E-08	1.4E-08	1.3E-08	1.7E-08
ENE	3.2E-08	2.2E-08	1.4E-08	2.3E-08	1.3E-08	1.2E-08	1.7E-08
NE	1.9E-08	1.3E-08	8.7E-09	1.4E-08	8.0E-09	7.4E-09	1.0E-08
NNE	1.3E-08	9.3E-09	6.1E-09	9.7E-09	5.6E-09	5.2E-09	7.1E-09

	Distance (m)						
Direction	1815	1209	2102	2173	1887	2562	1860
N	5.2E-09	9.2E-09	4.1E-09	3.9E-09	4.9E-09	3.1E-09	5.0E-09
NNW	5.4E-09	9.8E-09	4.3E-09	4.1E-09	5.1E-09	3.2E-09	5.2E-09
NW	6.1E-09	1.1E-08	4.8E-09	4.6E-09	5.7E-09	3.6E-09	5.8E-09
WNW	1.1E-08	1.9E-08	8.4E-09	8.0E-09	1.0E-08	6.2E-09	1.0E-08
W	1.1E-08	2.0E-08	8.7E-09	8.3E-09	1.0E-08	6.4E-09	1.1E-08
WSW	7.2E-09	1.3E-08	5.7E-09	5.5E-09	6.8E-09	4.2E-09	6.9E-09
SW	4.7E-09	8.4E-09	3.8E-09	3.6E-09	4.4E-09	2.8E-09	4.5E-09
SSW	5.8E-09	1.0E-08	4.7E-09	4.5E-09	5.5E-09	3.5E-09	5.6E-09
S	1.0E-08	1.2E-08	9.3E-09	9.1E-09	9.8E-09	8.1E-09	9.9E-09
SSE	2.0E-08	3.4E-08	1.6E-08	1.5E-08	1.8E-08	1.2E-08	1.9E-08
SE	2.1E-08	3.7E-08	1.7E-08	1.6E-08	2.0E-08	1.2E-08	2.0E-08
ESE	1.9E-08	3.4E-08	1.5E-08	1.5E-08	1.8E-08	1.1E-08	1.9E-08
E	2.1E-08	3.7E-08	1.6E-08	1.6E-08	1.9E-08	1.2E-08	2.0E-08
ENE	2.0E-08	3.6E-08	1.6E-08	1.5E-08	1.9E-08	1.2E-08	1.9E-08
NE	1.2E-08	2.2E-08	9.8E-09	9.3E-09	1.2E-08	7.1E-09	1.2E-08
NNE	8.5E-09	1.5E-08	6.8E-09	6.5E-09	8.0E-09	5.0E-09	8.2E-09

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

	Distance (m)					
Direction	2158	2251	2206	1985	2018	1811
N	4.0E-09	3.7E-09	3.8E-09	4.5E-09	4.4E-09	5.2E-09
NNW	4.2E-09	3.9E-09	4.0E-09	4.7E-09	4.6E-09	5.4E-09
NW	4.7E-09	4.4E-09	4.5E-09	5.3E-09	5.2E-09	6.1E-09
WNW	8.1E-09	7.6E-09	7.8E-09	9.2E-09	9.0E-09	1.1E-08
W	8.4E-09	7.9E-09	8.1E-09	9.6E-09	9.3E-09	1.1E-08
WSW	5.5E-09	5.2E-09	5.3E-09	6.3E-09	6.1E-09	7.2E-09
SW	3.6E-09	3.4E-09	3.5E-09	4.1E-09	4.0E-09	4.7E-09
SSW	4.5E-09	4.2E-09	4.4E-09	5.1E-09	5.0E-09	5.9E-09
S	9.1E-09	8.9E-09	9.0E-09	9.6E-09	9.5E-09	1.0E-08
SSE	1.5E-08	1.4E-08	1.5E-08	1.7E-08	1.7E-08	2.0E-08
SE	1.6E-08	1.5E-08	1.6E-08	1.8E-08	1.8E-08	2.1E-08
ESE	1.5E-08	1.4E-08	1.4E-08	1.7E-08	1.6E-08	1.9E-08
E	1.6E-08	1.5E-08	1.5E-08	1.8E-08	1.7E-08	2.1E-08
ENE	1.5E-08	1.4E-08	1.5E-08	1.8E-08	1.7E-08	2.0E-08
NE	9.4E-09	8.8E-09	9.0E-09	1.1E-08	1.0E-08	1.2E-08
NNE	6.5E-09	6.1E-09	6.3E-09	7.4E-09	7.2E-09	8.5E-09