

# QUARTERLY UPDATE

FOR OCTOBER 1, 1992 THROUGH JANUARY 1, 1993

## HISTORICAL RELEASE REPORT (HRR)

PREPARED BY

ENVIRONMENTAL RESTORATION  
FACILITIES OPERATIONS MANAGEMENT

EG&G ROCKY FLATS, INC.

JANUARY 29, 1993

REVIEWED FOR CLASSIFICATION  
By C. M. Pasqua (JNO)  
Date 1-29-93

REFERENCE NUMBER: TO BE DETERMINED

IHSS Number: Not Applicable

Unit Name: Hillside spill North of Solar Evaporation  
Pond 207B North

Approx. Location: N751,000; E2,085,000

Date(s) of Operation or Occurrence

November 30, 1992

Description of Operation or Occurrence

A release of approximately 490 gallons of interceptor trench water was reported at 1:45 am on November 30, 1992. Surface water runoff and potentially contaminated groundwater are collected in the Interceptor Trench Pump House (ITPH) system prior to being pumped from a centralized sump into the 207B North Solar Evaporation Pond. The release originated from a separation of a pipe coupling in the 3" transfer line on the east slope of the 207B North Solar Evaporation Pond berm and flowed onto the surrounding soil.

The 3 ft. section of drain hose that was connected to the end of the inlet pipe to the 207B North Pond had frozen during several days of sub zero weather and caused a back pressure in the pipe when the interceptor central sump began to pump water into the pond.

Physical/Chemical Description of Constituents Released

The interceptor trench water is managed as RCRA-regulated hazardous waste because the groundwater may contain RCRA-regulated hazardous constituents due to the possibility of releases from the Solar Evaporation Ponds. Previous analytical testing indicate that listed hazardous waste constituents have been detected in the interceptor trench water. The material in the Solar Evaporation Ponds has been characterized as RCRA-regulated waste with the following EPA waste codes: D006, F001, F002, F003, F005, F006, F007, and F009. A sample of the water was taken on November 30, 1992 and preliminary results indicate that CLP volatiles are comparable to analytical results taken previously for this waste stream (Table 1). Upon validation of analytical results, all data will be forwarded to the Colorado Dept. of Health (CDH).

Table 1

	Mean ug/l	Standard Deviation	Maximum Detected	Number Detects	Number samples
Cadmium	1.84*	0.81	7.50 U	0	24
Chromium	9.84	11.10	32.50	8	26
Lead	1.23	0.80	3.60	2	28
Mercury	0.15	0.13	0.63	4	27
Silver	3.93	2.56	11.10	2	22
Carbon Tetrachloride	2.58	1.85	11.00	1	25
Toluene	2.50*	0.00	5.00 U	0	25
Trichloroethene	3.02	1.20	7.00	2	26

Note: \* Mean calculated using half the detection limit for concentrations at the detection limit

U Analyzed but not detected

#### Responses to Operation or Occurrence

CDH was notified on November 30, 1992 that the RCRA Contingency Plan had been implemented. The Environmental Protection Agency, Region VIII was notified by facsimile on December 1, 1992.

The pipe connection has been repaired and the system was placed back into service. The released material was not directly recoverable because it soaked into the soil. Due to the location of the release (upgradient of the ITPH system in an area previously identified to be possibly contaminated by past releases from the proximal Solar Evaporation Ponds), no action was taken to immediately recover the material.

#### Fate of Constituents Released to Environment

The area impacted by this release is submitted in accordance with the IAG, Sections I.B.3 Notification, and I.B.5 Historical Release Report for final disposition.

#### Comments

Map generation of spill area and survey coordinates are in progress. Addition of current validated analytical results will be transmitted to the EPA and CDH upon receipt to accompany this update.

#### References

As enclosed:

RCRA Contingency Plan Implementation Report No. 92-023

REFERENCE NUMBER: TO BE DETERMINED

IHSS Number: 114, Operable Unit 7, Sanitary Landfill

Unit Name: Present Landfill

Approx. Location: N752,500; E2,083,000

Date(s) of Operation or Occurrence

The present sanitary landfill has been in operation from August 14, 1968 to present.

An occurrence was reported on September 25, 1992

Description of Operation or Occurrence

A release to the environment of greater than the reportable quantity (RQ) of RCRA-regulated hazardous waste was reported on September 25, 1992. The hazardous substance release was the result of improper disposal of cleanup materials (soil and absorbent) from a diesel fuel spill at the present landfill location.

Approximately one gallon of fuel was spilled onto the asphalt surface while patching the building 850 parking lot. The release was cleaned up with 50 pounds of soil and oil-dri absorbent and inadvertently taken to the landfill for disposal.

Physical/Chemical Description of Constituents Released

Based upon process knowledge, cleanup materials from diesel spills are managed as RCRA-regulated waste because the material could contain levels of benzene that exceed the TCLP limit. The EPA waste code for this waste is D018.

Responses to Operation or Occurrence

CDH was notified on September 25, 1992 that the RCRA Contingency Plan had been implemented as a precautionary measure. The Environmental Protection Agency, Region VIII was notified by facsimile on September 28, 1992. An estimated 100 pounds of material suspected to be contaminated were recovered from the landfill release location and disposed of properly.

Fate of Constituents Released to Environment

The area impacted by this release is submitted in accordance with the IAG, Sections I.B.3 Notification, and I.B.5 Historical Release Report for final disposition. Any material not recovered, will be remediated with the landfill as part of Operable Unit 7.

Comments

) This release does not add additional scope or cost variables for incorporation into Operable Unit 7 and will be incorporated under existing work plans.

References

As enclosed:

RCRA Contingency Plan Implementation Report No. 92-021

REFERENCE NUMBER: TO BE DETERMINED

IHSS Number: Not Applicable  
Unit Name: Transformer 443-2, Building 443  
Approx. Location: N749,500; E2,082,000

Date(s) of Operation or Occurrence

Unknown

Description of Operation or Occurrence

Transformer 443-2 is located near the southwest corner of Building 443. The transformer was observed leaking small quantities of oil during a routine inspection in April of 1992. The area is surrounded by a concrete berm and restricted by a fence.

This site was not originally sampled as part of the sitewide screening effort to categorize the 35 suspected PCB sites in August of 1991. However, the surrounding soil was sampled in the same manner as the other sites in September of 1991 as requested by EG&G Utilities Dept. for an electrical upgrade construction project.

Physical/Chemical Description of Constituents Released

Analytical data show PCB contamination is present in soils surrounding the transformer at 230 parts per million (ppm). Radiological samples collected at the same time were analyzed and indicate background levels for Pu, U, and Am. Wipe samples collected from the outside of the transformer in April 1992 indicate that the present dielectric oil is PCB contaminated at 2000 ug/100<sup>2</sup>cm (outside). Oil samples were also analyzed in April 1992 and show that the oil is contaminated at levels of 12,000 ppm.

Responses to Operation or Occurrence

The transformer has been taken out of service since April 1992 and notification was made to DOE at the time of the incident. This site is currently being addressed by EG&G with the transformer, oil, and concrete pad cleanup actions under TSCA regulations. All contaminated soils are to be remediated under CERCLA cleanup standards to 1 ppm. Work is scheduled to begin in early March 1993.

Fate of Constituents Released to Environment

The area impacted by this release is submitted in accordance with the IAG, Sections I.B.3 Notification, and I.B.5 Historical Release Report for final disposition.

Comments

A site location map and analytical data from soil sampling, wipe sampling and analysis of the present oil is enclosed with this update.

References

As enclosed:

EG&G Rocky Flats Environmental Management Department Assessment of Potential Releases of Polychlorinated Biphenyls (PCBs), Preliminary Assessment/Site Description, July 1991

# MAP LEGEND

PAVED ROADS

FENCE(S)

BUILDINGS

APPROXIMATE  
TRANSFORMER/  
PAD LOCATIONS  
(NOT TO SCALE)

APPROXIMATE  
SAMPLE LOCATIONS

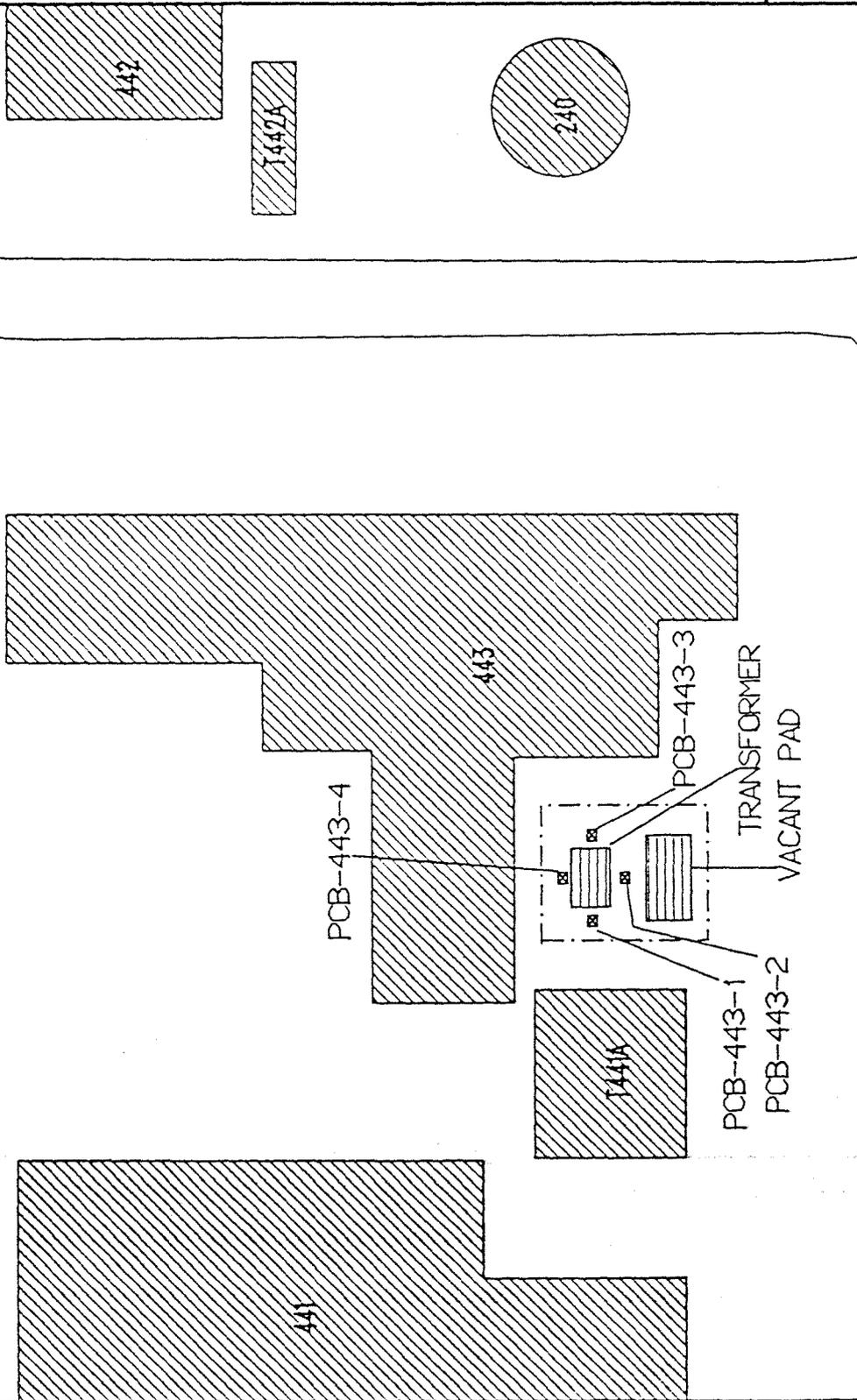


U. S. DEPARTMENT  
of ENERGY  
Rocky Flats Plant  
Golden, Colorado

PRELIMINARY PCB  
INVESTIGATION

SITE No. 443-2  
(special)

SEPTEMBER 25, 1991



SAMPLE LOCATION	SAMPLE NUMBER	SAMPLE ANALYTE(S)
PCB-443-2-1	SS00517ST	PCB <sub>8</sub>
PCB-443-2-2	SS00521ST	Pu, Am, U
PCB-443-2-3	SS00518ST	PCB <sub>8</sub>
PCB-443-2-3	SS00522ST	Pu, Am, U
PCB-443-2-3	SS00519ST	PCB <sub>8</sub>
PCB-443-2-4	SS00523ST	Pu, Am, U
PCB-443-2-4	SS00520ST	PCB <sub>8</sub>
PCB-443-2-4	SS00524ST	Pu, Am, U

Cust ID: SS005175T SS005185T SS005195T  
 RFX#: 001 002 003  
 Matrix: SOIL SOIL SOIL  
 D.F.: 5.00 500 5.00  
 Units: ug/Kg ug/Kg ug/Kg

Surrogate: Di-n-butylchlorobenzene

Sample	Concentration	Limit	Units
Aroclor-1016	430 U	44000 U	44 %
Aroclor-1221	430 U	44000 U	410 U
Aroclor-1232	430 U	44000 U	410 U
Aroclor-1242	430 U	44000 U	410 U
Aroclor-1248	430 U	44000 U	410 U
Aroclor-1254	690	230000	1300
Aroclor-1260	700	80000	990
	860 U	87000 U	820 U

Cust ID: SS005205T SS005205T SS005205T  
 RFX#: 004 004 MS 004 MSD  
 Matrix: SOIL SOIL SOIL  
 D.F.: 50.0 50.0 50.0  
 Units: ug/Kg ug/Kg ug/Kg

Surrogate: Di-n-butylchlorobenzene

Sample	Concentration	Limit	Units
Aroclor-1016	4000 U	4100 U	4100 U
Aroclor-1221	4000 U	4100 U	4100 U
Aroclor-1232	4000 U	4100 U	4100 U
Aroclor-1242	4000 U	4100 U	4100 U
Aroclor-1248	4000 U	4100 U	4100 U
Aroclor-1254	9200	4100 U	4100 U
Aroclor-1260	8100 U	8100 U	8100 U

Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not requested. HS= Not spiked.  
 Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. \* = Outside of EPA CLP QC



RFW Batch Number: 92046715

Client: EG & G Rocky Flats Plant

Work Order: 0000-00-00-0000

PBLK BS

PBLK

443-92-04-06

443-92-04-06

443-92-04-06

443-92-04-06

443-92-04-06

443-92-04-06

443-92-04-06

Sample Information  
 RFW#: 001  
 Matrix: WIPE  
 D.F.: 100  
 Units: ug/WIPE

RFW#: 002  
 Matrix: WIPE  
 D.F.: 200  
 Units: ug/WIPE

RFW#: 003  
 Matrix: WIPE  
 D.F.: 200  
 Units: ug/WIPE

RFW#: 004  
 Matrix: WIPE  
 D.F.: 1.00  
 Units: ug/WIPE

RFW#: 92GP0291-MB1  
 Matrix: WIPE  
 D.F.: 1.00  
 Units: ug/WIPE

Surrogate	Di-n-butylchloro	date	D	%	D	%	D	%	D	%	D	%
Aroclor-1016			24	U	48	U	48	U	0.24	U	0.24	U
Aroclor-1221			24	U	48	U	48	U	0.24	U	0.24	U
Aroclor-1232			24	U	48	U	48	U	0.24	U	0.24	U
Aroclor-1242			24	U	1800		2000		0.24	U	0.24	U
Aroclor-1248			440	U	48	U	48	U	0.24	U	0.24	U
Aroclor-1254			48	U	96	U	96	U	0.48	U	0.48	U
Aroclor-1260			48	U	96	U	96	U	0.48	U	0.48	U

Cust ID: PBLK BSD

Sample Information  
 RFW#: 92GP0291-MB1  
 Matrix: WIPE  
 D.F.: 1.00  
 Units: ug/WIPE

Surrogate	Di-n-butylchloro	date	D	%
Aroclor-1016			0.24	U
Aroclor-1221			0.24	U
Aroclor-1232			0.24	U
Aroclor-1242			0.24	U
Aroclor-1248			0.24	U
Aroclor-1254			122	%
Aroclor-1260			0.48	U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not requested. NS= Not spiked.  
 %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. \*= Outside of EPA CLP QC

Roy F. Weston, Inc. - Gulf Coast Laboratories

Report Date: 04/17/92 09:07  
 PCBs by GC  
 Page: 1

RFW Batch Number: 9204G739

Client: EG & G Rocky Flats Plant Work Order: 0000-00-00-0000

Cust ID: 443-2 443-2 443-2 PBLK PBLK BS PBLK BSD  
 RFW#: 001 MS 001 MSD 001 MSD 92GPO300-MB1 92GPO300-MB1 92GPO300-MB1  
 Matrix: OIL OIL OIL OIL OIL OIL  
 D.F.: 500 500 500 0.500 0.500 0.500  
 Units: ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg

Surrogate: Di-n-butylchloro	D	%	f	D	%	f	D	%	f	D	%	f	D	%	f
Aroclor-1016	1200000	U		1200000	U		1200000	U		1200	U		1200	U	
Aroclor-1221	1200000	U		1200000	U		1200000	U		1200	U		1200	U	
Aroclor-1232	1200000	U		1200000	U		1200000	U		1200	U		1200	U	
Aroclor-1242	12000000	B		12000000	B		12000000	B		870	J		1200	U	
Aroclor-1248	1200000	U		1200000	U		1200000	U		1200	U		1200	U	
Aroclor-1254	2400000	U		0	%		0	%		2400	U		111	%	
Aroclor-1260	2400000	U		2400000	U		2400000	U		2400	U		2400	U	

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not requested. MS= Not spiked.  
 %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. \*= Outside of EPA CLP QC

REFERENCE NUMBER: TO BE DETERMINED

IHSS Number: 142.6, Operable Unit 6, Walnut Creek Drainage

Unit Name: Retention Pond B-2, Walnut Creek Drainage

Approx. Location: N750,500; E2,087,000

Date(s) of Operation or Occurrence

A Diesel spill reported on October 27, 1992 within the spillway (northeast corner) of Pond B-2.

Description of Operation or Occurrence

A release to the environment of greater than the reportable quantity (RQ) of RCRA-regulated hazardous waste was reported on September 25, 1992. The hazardous substance release was the result a leak in the fuel tank of a portable pump used to transfer water from Pond B-2 to Pond A-2. Approximately 18 gallons of diesel fuel were spilled directly onto the ground.

Physical/Chemical Description of Constituents Released

Based upon process knowledge, cleanup materials from diesel spills are managed as RCRA-regulated waste because the material could contain levels of benzene that exceed the TCLP limit. The EPA waste code for this waste is D018. Samples collected from the soil were analyzed for TCLP volatiles and gross alpha beta radiological screens. The analytical data show that there were no RCRA-regulated hazardous constituents associated with the release and radiological screens were below background.

Responses to Operation or Occurrence

The pump was taken out of service for repair. An estimated 200 pounds of material (soil and absorbent booms) suspected to be contaminated was recovered from the spill area and containerized in drums and one half crate plywood box. The area was declared a RCRA 90 day accumulation area until analytical data were received on October 29, 1992. Notifications were made to the Occurrence Notification Center (ONC), the National Response Center (NRC), the Colorado Dept. of Health (CDH), and the State Oil Inspector on October 27, 1992.

Fate of Constituents Released to Environment

The area impacted by this release is submitted in accordance with the IAG, Sections I.B.3 Notification, and I.B.5 Historical Release Report for final disposition.

Comments

)  
None.

References

As enclosed:

Analytical Data for TCLP Volatiles.

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

00502

Lab Name: GLAB

Contract:

Lab Code: GLAB

Case No.:

SAS No.: 92X0

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: B-2 SOIL

Sample wt/vol: 5. (g/mL) ML

Lab File ID: OCT2902

Level: (low/med) LOW

Date Received: 10/29/92

% Moisture: not dec.100.

Date Analyzed: 10/29/92

Column: (pack/cap) CAP

Dilution Factor: 10.00

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L Q

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	-----Chloromethane	100.	U
74-83-9	-----Bromomethane	100.	U
75-01-4	-----Vinyl Chloride	100.	U
75-00-3	-----Chloroethane	100.	U
75-09-2	-----Methylene Chloride	50.	U
67-64-1	-----Acetone	100.	U
75-15-0	-----Carbon Disulfide	50.	U
75-35-4	-----1,1-Dichloroethene	50.	U
75-34-3	-----1,1-Dichloroethane	50.	U
540-59-0	-----1,2-Dichloroethene (total)	50.	U
67-66-3	-----Chloroform	50.	U
107-06-2	-----1,2-Dichloroethane	50.	U
78-93-3	-----2-Butanone	100.	U
71-55-6	-----1,1,1-Trichloroethane	50.	U
56-23-5	-----Carbon Tetrachloride	50.	U
75-27-4	-----Bromodichloromethane	50.	U
78-87-5	-----1,2-Dichloropropane	50.	U
10061-01-5	-----cis-1,3-Dichloropropene	50.	U
79-01-6	-----Trichloroethene	50.	U
124-48-1	-----Dibromochloromethane	50.	U
79-00-5	-----1,1,2-Trichloroethane	50.	U
71-43-2	-----Benzene	50.	U
10061-02-6	-----trans-1,3-Dichloropropene	50.	U
75-25-2	-----Bromoform	50.	U
108-10-1	-----4-Methyl-2-Pentanone	50.	U
591-78-6	-----2-Hexanone	50.	U
127-18-4	-----Tetrachloroethene	50.	U
79-34-5	-----1,1,2,2-Tetrachloroethane	50.	U
108-88-3	-----Toluene	31.	U
108-90-7	-----Chlorobenzene	50.	U
100-41-4	-----Ethylbenzene	21.	U
100-42-5	-----Styrene	50.	U
1330-20-7	-----Xylenes (total)	120.	U

IA  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

00504

Lab Name: GLAB

Contract:

Lab Code: GLAB

Case No.:

SAS No.: 92X0

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: B-2 SOCK

Sample wt/vol: 5. (g/mL) ML

Lab File ID: OCT2904

Level: (low/med) LOW

Date Received: 10/29/92

% Moisture: not dec.100.

Date Analyzed: 10/29/92

Column: (pack/cap) CAP

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
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74-87-3-----	Chloromethane	100.	U
74-83-9-----	Bromomethane	100.	U
75-01-4-----	Vinyl Chloride	100.	U
75-00-3-----	Chloroethane	100.	U
75-09-2-----	Methylene Chloride	50.	U
67-64-1-----	Acetone	100.	U
75-15-0-----	Carbon Disulfide	50.	U
75-35-4-----	1,1-Dichloroethene	50.	U
75-34-3-----	1,1-Dichloroethane	50.	U
540-59-0-----	1,2-Dichloroethene (total)	50.	U
67-66-3-----	Chloroform	50.	U
107-06-2-----	1,2-Dichloroethane	50.	U
78-93-3-----	2-Butanone	100.	U
71-55-6-----	1,1,1-Trichloroethane	50.	U
56-23-5-----	Carbon Tetrachloride	50.	U
75-27-4-----	Bromodichloromethane	50.	U
78-87-5-----	1,2-Dichloropropane	50.	U
10061-01-5-----	cis-1,3-Dichloropropene	50.	U
79-01-6-----	Trichloroethene	50.	U
124-48-1-----	Dibromochloromethane	50.	U
79-00-5-----	1,1,2-Trichloroethane	50.	U
71-43-2-----	Benzene	50.	U
10061-02-6-----	trans-1,3-Dichloropropene	50.	U
75-25-2-----	Bromoform	50.	U
108-10-1-----	4-Methyl-2-Pentanone	50.	U
591-78-6-----	2-Hexanone	50.	U
127-18-4-----	Tetrachloroethene	50.	U
79-34-5-----	1,1,2,2-Tetrachloroethane	50.	U
108-88-3-----	Toluene	50.	U
108-90-7-----	Chlorobenzene	50.	U
100-41-4-----	Ethylbenzene	50.	U
100-42-5-----	Styrene	50.	U
1330-20-7-----	Xylenes (total)	50.	U

RF-11851

# EG&G ROCKY FLATS

DIST.		
ADMIN.		
ENR. H.S.		
ENR. J.B.		
ENR. J.C.		
ENR. J.D.		
ENR. J.E.		
ENR. J.F.		
ENR. J.G.		
ENR. J.H.		
ENR. J.I.		
ENR. J.K.		
ENR. J.L.		
ENR. J.M.		
ENR. J.N.		
ENR. J.O.		
ENR. J.P.		
ENR. J.Q.		
ENR. J.R.		
ENR. J.S.		
ENR. J.T.		
ENR. J.U.		
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ENR. M.N.		
ENR. M.O.		
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ENR. M.R.		
ENR. M.S.		
ENR. M.T.		
ENR. M.U.		
ENR. M.V.		
ENR. M.W.		
ENR. M.X.		
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ENR. N.C.		
ENR. N.D.		
ENR. N.E.		
ENR. N.F.		
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ENR. N.M.		
ENR. N.N.		
ENR. N.O.		
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ENR. N.R.		
ENR. N.S.		
ENR. N.T.		
ENR. N.U.		
ENR. N.V.		
ENR. N.W.		
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ENR. O.A.		
ENR. O.B.		
ENR. O.C.		
ENR. O.D.		
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ENR. O.F.		
ENR. O.G.		
ENR. O.H.		
ENR. O.I.		
ENR. O.J.		
ENR. O.K.		
ENR. O.L.		
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EG&G ROCKY FLATS, INC.  
ROCKY FLATS PLANT, P.O. BOX 464, GOLDEN, COLORADO 80402-0464 • (303) 956-7000

October 9, 1992

92-RF-11851

Frederick R. Dowsett, PhD., Unit Leader  
Monitoring and Enforcement  
Hazardous Materials and  
Waste Management Division  
Colorado Department of Health  
4300 Cherry Creek Drive South  
Denver, Colorado 80222-1530

### RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) CONTINGENCY PLAN IMPLEMENTATION REPORT 92-021 - JMK-0969-92

Enclosed is RCRA Contingency Plan Implementation Report No. 92-021 which documents the status and information concerning a release to the environment of greater than one pint/one pound of RCRA-regulated hazardous waste. The release was a result of improper disposal at the sanitary landfill located at the Rocky Flats Plant (RFP) of cleanup materials (soil and absorbent) from a diesel fuel spill. Approximately one gallon of diesel fuel was spilled onto an asphalt surface while patching Building 850 parking lot. The fuel release was cleaned up with approximately 50 pounds of soil and oil-dri which were used to absorb the liquid residue from the asphalt surface. The contaminated soil and absorbent were then inappropriately placed in the back of a subcontractor's dump truck which was en route to the sanitary landfill with approximately eight yards of dirt. The dirt and cleanup materials were subsequently unloaded at the sanitary landfill. Based on process knowledge, cleanup materials from diesel fuel spills at RFP are managed as RCRA-regulated waste because the material could contain levels of benzene that exceed the Toxicity Characteristic Leaching Procedure (TCLP) limit. The Environmental Protection Agency (EPA) waste code for this waste is D018. An attempt was made to recover the cleanup material from the eight yards of dirt which were deposited at the landfill. Approximately 100 pounds of soil (which released an odor of petroleum product), with small quantities of absorbent, was collected and removed from the landfill.

Your office was notified on September 25, 1992, that the RCRA Contingency Plan Implementation Report had been implemented as a precautionary measure. The EPA, Region VIII was notified by facsimile on September 28, 1992. The National Response Center was also notified on September 25, 1992, because the quantity of material (contaminated soil and absorbent) released (disposed of) into the environment (sanitary landfill) exceeded the reportable quantity (ten pounds of waste) for the unlisted hazardous waste characteristic of toxicity for benzene (D018).

AUTHORIZED CLASSIFIER SIGNATURE

*Signature*  
9/29/92

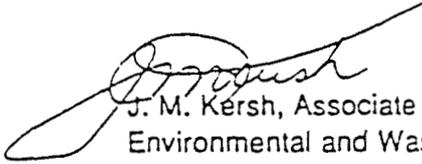
REPLY TO RFP CC NO:  
*None*

CLASSIFICATION STATUS  
OPEN  CLOSED   
 PARTIAL

APPROVALS:  
*Signature*  
EG&G TYPIST INITIALS  
:KAM

Frederick R. Dowsett  
October 9, 1992  
92-RF-11851  
Page 2

If you have any questions regarding this subject, please contact K. A Holstein at 966-2435 or J. M. Mynard at 966-6087.



J. M. Kersh, Associate General Manager  
Environmental and Waste Management  
EG&G Rocky Flats, Inc.

MLJ: kam

Enclosure:  
As Stated

cc:  
D. M. Maxwell - EPA, Region VIII  
B. Brainard - DOE, RFO  
D. Grosek - DOE, RFO  
T. E. Lukow - DOE, RFO  
W. E. Seyfert - DOE, RFO

RCRA CONTINGENCY PLAN  
Implementation Report No. 92-021

RCRA CONTINGENCY PLAN  
IMPLEMENTATION REPORT  
ROCKY FLATS PLANT  
EPA ID NUMBER CO7890010526

This report is made in compliance with the requirements of 6 CCR 1007-3, Parts 264.56 (j) and 265.56 (j) for a written report within 15 days of the implementation of the RCRA Contingency Plan. The requirements for this are given below and will be addressed in the order listed, excerpted from 6 CCR 1007-3, Parts 264.56 and 265.56:

"(j)...Within 15 days after the incident, he must submit a written report on the incident to the department. The report must include:

- (1) Name, address, and telephone number of the owner or operator
- (2) Name, address, and telephone number of the facility
- (3) Date, time, and type of incident (fire, explosion)
- (4) Name and quantity of material(s) involved
- (5) The extent of injuries, if any
- (6) An assessment of actual or potential hazards to human health and the environment, where this is applicable; and
- (7) Estimated quantity and disposition of recovered material resulted from the incident."

- 
- (1) Name, address and telephone number of the owner of the facility:

United States Department of Energy  
Rocky Flats Plant  
Post Office Box 928  
Golden, Colorado 80402  
(303) 966-2025

Facility Contact:  
Terry A. Vaeth, Manager

- (2) Name, address and telephone number of the facility:

U.S. Department of Energy  
Rock Flats Plant  
Post Office Box 928  
Golden, Colorado 80402  
(303) 966-2025

A. SUMMARY

The RCRA Contingency Plan Implementation Report was implemented on September 25, 1992, due to a release to the environment of greater than one pint/one pound of RCRA-regulated hazardous waste. The release was a result of improper disposal at the sanitary landfill located at RFP of cleanup materials (soil and absorbent) from a diesel fuel spill. Approximately one gallon of diesel fuel was spilled onto an asphalt surface while patching the Building 850 parking lot. The fuel release was cleaned up with approximately 50 pounds of soil and oil-dri which were used to absorb the liquid residue from the asphalt surface. The contaminated soil and absorbent were then inappropriately placed in the back of a subcontractor's dump truck which was en route to the sanitary landfill with approximately eight yards of dirt. The dirt and cleanup materials were subsequently unloaded at the sanitary landfill. Based on process knowledge, cleanup materials from diesel fuel spills are managed as RCRA-regulated waste because the material could contain levels of benzene that exceed the TCLP limit. The EPA waste code for this waste is D018. Approximately 100 pounds of soil (which released an odor of petroleum product), with small quantities of absorbent, was collected and removed from the landfill.

B. DESCRIPTION OF INCIDENT:

At approximately 12:00 p.m. on September 25, 1992, a container of diesel fuel located on the back of a subcontractors truck was overturned and approximately one gallon of fuel was spilled onto the asphalt. The diesel fuel was being used to clean and lubricate the asphalt paving tools used in patching the Building 850 parking lot. The subcontractor immediately shoveled dirt from the side of the road to contain and clean up the spill. At approximately 12:15 p.m. a Construction Management Coordinator called the Shift Superintendent who then notified the RFP Fire Department as a non-emergency response. At approximately 12:16 p.m. the RFP Fire Department's Hazardous Materials Team responded to the spill. At that time, Garage personnel also arrived at the scene. When the Shift Superintendent, the response team and the Area Construction Manager arrived, the spill had been covered and raked into a pile per industry standards for containing and cleaning up diesel fuel spills. The RFP Fire Department is responsible for containing releases of hazardous substances and material. Since the spill was contained, the Hazardous Materials Team did not take any action. Per RFP plant procedures which require that excess petroleum liquids are picked up with absorbent, the Garage personnel placed approximately 20 pounds of oil-dri (absorbent) on the dirt to absorb all visible liquid. The Shift Superintendent then erroneously directed Construction Management to have the subcontractor place the soil and absorbent with a truckload of dirt that was being taken to the sanitary landfill. At approximately 12:45 p.m. the truck proceeded to the landfill, where the driver dumped the load as instructed by landfill employees. This dirt was unloaded within the fenced landfill area.

Upon returning to his office from the Building 850 parking lot, the Shift Superintendent contacted the "on-call" Waste Programs (WP) representative. The WP representative was concerned with the way the incident was handled, so the representative contacted the Spill Response and Reporting Program Manager. The Program Manager made the determination that it was a hazardous waste

release after verifying that there was insufficient analytical data to overturn the decision made to declare this material a RCRA-regulated hazardous waste. This determination had been previously made because the cleanup materials could contain quantities of benzene greater than the TCLP limit; therefore, the cleanup material from diesel spills has been managed as a RCRA-regulated hazardous waste with EPA waste code D018.

The Operations Manager responsible for the Building 850 parking lot and the landfill, as well as, the Associate General Manager of Environmental and Waste Management were notified of the events.

C. CORRECTIVE ACTION:

An attempt was made to locate and recover the cleanup material from the eight yards of dirt located at the landfill. Organic vapor detection equipment was used to survey the surface of the dirt but no detectable organic vapors were found. Holes were dug into the mound in an attempt to locate the cleanup material. Evidence of absorbent material (Oil-dri) was located near the top of the mound. No organic vapors were detected with the monitoring equipment; however the odor of petroleum products was smelled. Approximately 100 pounds of soil (which released an odor of petroleum product), with small quantities of absorbent, was collected and removed from the landfill. No other absorbent was discovered. It is believed that the majority of the cleanup materials was recovered; however, some of the cleanup material may still be in the landfill.

On September 28, 1992, the subcontractor was notified by Construction Management that when a spill occurs they are to make immediate notifications to the plant and wait for the plant spill response teams for the containment, collection and disposal of the spill. The pre-construction checklist for subcontractors will be modified to include a requirement that any release of a hazardous material is reported to Construction Management prior to taking any corrective actions.

Waste Programs will issue a letter of guidance to the participants (Shift Superintendent, RFP Fire Department and the Garage) of this incident reminding them of the requirements of handling petroleum product spills. These requirements had been outlined in existing plant procedures.

In the future, as part of the Waste Stream and Residue Identification and Characterization program, samples of cleanup material from similar diesel fuel spills will be collected and analyzed to provide analytical data to be used to characterize cleanup materials future diesel fuel spills. The analytical results will be forwarded to your office.

(4) NAME AND QUANTITY OF MATERIAL INVOLVED:

A mixture of approximately one gallon of diesel fuel and approximately 50 pounds of cleanup material (soil and absorbent) was released (disposed of) into the environment (sanitary landfill). EG&G Rocky Flats had declared cleanup materials from diesel fuel spills at the RFP as RCRA-regulated hazardous waste based on process knowledge that the cleanup material could fail TCLP for benzene (D018).

(5) EXTENT OF INJURIES:

There were no injuries to personnel.

(6) AN ASSESSMENT OF ACTUAL OR POTENTIAL THREAT TO HUMAN HEALTH AND ENVIRONMENT:

An attempt was made to locate and recover the cleanup material (0.7 cubic feet) from the eight yards of dirt. Approximately 100 pounds of soil (which released an odor of petroleum product), with small quantities of absorbent, was collected and removed from the dirt. The impact to the environment of any material not recovered, if any, as a result of this incident (the inadvertent disposal of approximately 0.7 cubic feet of cleanup material, which is RCRA-regulated hazardous waste, mixed with 216 cubic feet volume of uncontaminated soil at the sanitary landfill), is minimal in comparison to the preexisting condition of the sanitary landfill prior to this inadvertent disposal. The amount of RCRA-regulated hazardous waste added due to this incident is incrementally insignificant when compared to the volume of hazardous constituents that have already been placed into the landfill as documented in the Historical Release Report. (See Appendix 1 for a copy of the applicable section from the Historical Release Report.)

Any material not recovered, if any, will be remediated with the landfill as part of operable unit number 7 (OU7) remediation effort. The Interagency Agreement activities will include site investigations, site characterizations and possible site remediation. The Final Phase I RFI/RF Report is to be completed by March 16, 1994. The facts of this occurrence (including the success of recovering the cleanup material) will be forwarded to Environmental Management for inclusion in the updates to the Historical Release Report.

In addition, a surface water diversion ditch and groundwater interceptor system divert uncontaminated upstream water around the landfill to prevent degradation of this water by the landfill. Any leachate from the landfill is collected to prevent any contamination from being released offsite. Groundwater monitoring wells detect and monitor the levels of contamination within, around and beneath the landfill.

The result of this assessment is that if any of the cleanup material was not recovered from the dirt mound, the release would not present a significant increase in the actual or potential threat to human health or the environment.

(8) ESTIMATE QUANTITY AND DISPOSITION OF RECOVERED MATERIAL THAT RESULTED FROM THE INCIDENT:

Approximately 50 pounds of cleanup materials (soil and absorbent) from a diesel fuel spill was disposed of with approximately 16,000 pounds of loose dirt; and subsequently deposited at the landfill. Cleanup materials from diesel fuel spills have been declared RCRA-regulated hazardous waste because the cleanup materials could contain levels of benzene that exceed the TCLP limit. An attempt was made to locate and recover the cleanup material from the eight yards of dirt. Approximately 100 pounds of soil (which released an odor of petroleum product), with small quantities of absorbent, was collected and removed from the landfill. A sample of the recovered material will be collected and analyzed to determine disposal requirements.

IHSS Reference Number: 114, Operable Unit: 7

Unit Name: Present Landfill

Approximate Location: N752.500; E2.083.000

Date(s) of Operation or Occurrence

August 14, 1968 - Present

Description of Operation or Occurrence

The landfill was constructed in August 1968 for the disposal of the plant's uncontaminated solid wastes.<sup>1</sup> Preliminary landfill designs and anticipated operating procedures are documented.<sup>2</sup> The development and use of this landfill replaced the incinerator (PAC SW-133.5) and original landfill (PAC SW-115) as the method of sanitary solid waste disposal. Although initially this landfill had a projected life of 50 years, it is undergoing closure. Discussion of the Present Landfill has been divided into Routine Operation, Regulatory Issues, Structure/Construction, and Non-Routine Occurrences.

## Routine Operation

The landfill is used for the disposal of general RFP refuse collected from various locations throughout the plant. Operation of the disposal activities is directed by a landfill operator. Debris from production areas must be monitored and approved by appropriate on-site supervisors prior to placement in dumpsters. Liquids, sludge, or noncontaminated potentially hazardous solid materials must be reviewed and meet RFP specifications before disposal. Wastes include paper, rags, floor sweepings, cartons, demolition material, and miscellaneous items.<sup>3</sup> Routine operation of the landfill included the disposal of sanitary wastewater treatment plant sludge, asbestos, and polychlorinated biphenyls (PCBs).

## Sludge

Radioactively contaminated sludge from the sanitary wastewater treatment plant (Building 995) was routinely disposed of at the landfill from August 1968 through May 1970. The contamination consisted of uranium and plutonium which had entered the sanitary sewage system with laundry water.<sup>4</sup> Approximately 2,000 pounds of sludge containing an estimated 8 milligrams of plutonium were buried in the landfill.<sup>4</sup> This sludge also contained depleted uranium.<sup>5</sup> This practice was discontinued in May 1970 when offsite shipment of sludge as low-level waste began.<sup>4</sup>

In 1974, it was concluded that sludges from the sanitary sewage treatment plant could be safely disposed of onsite in either the landfill or as fertilizer when it was determined that the sludges were not contaminated with radionuclides.<sup>7</sup> In 1980, sludge from the reverse osmosis sludge beds was sampled for determination of suitability for landfill disposal.<sup>19</sup> It is not known if Reverse Osmosis Plant sludge from the reverse osmosis plant drying beds was placed in the landfill or not. Also in 1980, during the cleaning of Building 373 cooling tower, disposition of the sludge became a problem: the sludge was to be transported to the landfill.<sup>10</sup>

Water from backflushing the raw-water treatment plant filters contains solids removed during treatment. Settling tanks were provided for this water, which was pumped back to the treatment plant, and the sludge then pumped to drying beds. Dried sludge is trucked to the landfill.<sup>11</sup>

In 1985, asbestos generated onsite was disposed of in a designated area which consisted of a 10-foot deep pit.<sup>12</sup> Routine disposal practice consisted of placing asbestos-containing material in heavy plastic bags. These bags were disposed of in a designated pit and covered with clean dirt when the pit became full.<sup>12</sup> At the time, warning signs were displayed at the entrance to the disposal area and at 100 feet distance around the asbestos disposal pit. This operation was evaluated in 1985 and considered to be in compliance with the appropriate Federal regulations.<sup>12</sup>

A DOE environmental survey of RFP in September 1987 identified some deficiencies in asbestos disposal operations. Actions were initiated to upgrade these disposal operations.<sup>13</sup> At the time, the disposal practice was not in compliance because the pit was not covered with soil after each working day.<sup>14</sup> By December 1988, asbestos was disposed of in several pits in specified areas near the center of the landfill.<sup>15</sup> The locations of these areas were estimated by landfill operators and later marked with asbestos warning signs to comply with appropriate regulations. Records from June 1989 through April 1990 detail daily activities of asbestos disposal at the landfill. The records indicate some non-routine events associated with asbestos disposal such as ripped bags and insufficient daily cover.<sup>14</sup> Actions were taken to correct these problems.

### PCBs

Small quantities of PCBs are contained in materials that were routinely disposed of in the landfill. In 1976, it was determined that used fluorescent light ballasts could no longer be sent to the landfill because they contained small quantities of PCBs.<sup>16</sup> A 1985 reference identifies a designated area of the landfill as the disposal site of PCBs.<sup>17</sup> Supporting documentation for this has not been found; however, a specified cargo container located in the currently inactive hazardous waste storage area (PAC NW-203), east of the landfill, was used for PCB storage prior to offsite disposal. This area is located in the western portion of the landfill.

### Regulatory Issues

In October 1972, RFP policies on waste disposal at the landfill were reviewed and judged to be in accordance with applicable regulations.<sup>1</sup> Regulatory guidelines were issued in 1973 to control burial of solid and liquid wastes in the landfill prompting Health Physics to initiate a program of radioactive monitoring and scanning of the wastes.<sup>1</sup>

In 1977, a Solid Waste Management Plan was prepared in compliance with 40 CFR 241. This plan included both radiation monitoring and groundwater monitoring programs. Radiation monitoring included measurements at the point of waste origination and at the landfill. The groundwater monitoring program consisted of sampling the wells at the landfill every five months. The water samples were analyzed for plutonium, gross alpha, conductivity, pH, and nitrate.<sup>18</sup>

The Colorado Department of Health inspected the landfill in 1978 and 1979 at which times the landfill was reported to comply with state and federal minimum standards.<sup>19,20</sup> In 1986 and 1987, studies identified 241 nonhazardous solid waste streams and 97 hazardous waste streams disposed in the landfill. As of November 1986, disposal of the hazardous waste streams in the landfill was discontinued.<sup>1</sup> Because hazardous waste was disposed of at the landfill, it was designated as an interim status Resource Conservation and Recovery Act (RCRA) regulated unit and was included in the 1986 Part B Permit Application as a facility to be closed under interim status. Only non-hazardous waste disposal operations were to continue from that time forward.

## Structure/Construction

The landfill was sited in a natural drainage tributary to North Walnut Creek. A portion of the drainage was filled with soil from an on-site borrow area to a depth of up to five feet for the construction of a surface on which to place the first lift of waste.<sup>1</sup>

In 1974, prompted by the identification of elevated tritium activity downgradient of the landfill, significant changes were made to the landfill design. These included the construction of a surface water diversion ditch, a groundwater interceptor system, a leachate collection system, and two ponds.<sup>1</sup>

The surface water interceptor ditch was installed to intercept any surface water flowing toward the landfill and direct the collected water away from the landfill. The cross-sectional geometry of the ditch is a gravel-filled trapezoid approximately three feet deep.<sup>13</sup>

Among the 1974 improvements was a groundwater intercept system constructed to intercept and divert groundwater flow around the landfill. The design of the intercept system enabled groundwater to be discharged to the western pond (also called Pond 1 in some documents at that time), the eastern pond (also called Pond 2 in some documents at that time), or to surface drainage downslope of the eastern pond. The eastern pond was improved to meet engineering standards as a dam shortly after it was constructed.<sup>22</sup> The new East Landfill Pond had an engineered embankment which included a low-permeability clay core keyed into bedrock.<sup>22</sup>

Until January 1974, water collected in the ponds was pumped to the Solar Evaporation Ponds (PAC 000-101). After January 1974, it was diverted to a manhole northwest of Building 990 and discharged to Pond B-2 (PAC NE-142.6). By September 1975, spraying of the water onto spray fields adjacent to the landfill was initiated<sup>14</sup> (PAC NE-167.2 and PAC NE-167.3). Spraying was performed after the pond water was analyzed and indicated to meet established RFP guidelines. Authorization of spraying was obtained from the Manager of Environmental Analysis and Control's office. The weekly pond water samples were analyzed for gross alpha, gross beta, gamma emitting isotopes, and tritium activity.<sup>14</sup> Areas where spray evaporation operations historically occurred are discussed in detail in PAC NE-167.1, PAC NE-167.2, and PAC NE-167.3. Currently, water from the East Landfill Pond is sprayed along the banks of the pond in areas considered part of PAC NW-114.<sup>1</sup>

The western and eastern ponds were situated downgradient from the landfill. The western pond was 500 feet east of the advancing face of the landfill and the eastern pond was 1,000 feet east of the western pond at the time of construction.<sup>22</sup> A leachate-collection system was constructed for landfill expansion and waste was subsequently placed over it.<sup>1</sup> Leachate generated in the landfill discharged into the western pond until May 1981 when the pond was buried beneath the advancing face of the landfill.<sup>22</sup> Additional detail about the surface water, groundwater, and leachate collection systems can be found in the RCRA Facility Investigation/Remedial Investigation Workplan and the closure plans.<sup>1,22</sup> Design specifications for the construction activities of 1974 are available.<sup>24</sup>

In 1981 and 1982, in response to the need for more landfill space, two slurry walls were constructed to prevent groundwater migration into an expansion of the landfill to the east. The slurry walls are tied into the north and south arms of the groundwater diversion system. The walls are constructed of soil and bentonite and intersect the previously existing drainpipe. Design drawings of the slurry wall are available.<sup>13</sup>

## Non-Routine Occurrences

Numerous "hot items" have been identified in the landfill by routine FIDLER surveys performed during the placement of each lift of waste. Records indicate these radioactive materials were removed, returned to the building of origin, and disposed of properly. Routine FIDLER surveys were initiated in 1973 after the tritium source was discovered in the landfill.<sup>1</sup> References specifically describing individual events pertaining to the discovery of radioactive materials are identified in the reference list.<sup>24</sup>

Several non-routine incidents of non-radioactive waste disposed of in the landfill have been documented. These incidents include the disposal of a mercaptan (odor additive to natural gas) tank<sup>25</sup> and the disposal and puncturing of a bag containing tear gas powder.<sup>27</sup> In 1978, an information sheet was proposed which was to cover the nonroutine disposal of waste to the landfill.<sup>28</sup> Approval was given by the Environmental Analysis and Control Group for the disposal of nonroutine waste into the landfill. For example, approval was given for the disposal of one drum of solidified polystyrene resin used in fiberglassing.<sup>28</sup>

On January 29, 1971, approximately 700 gallons of No. 6 fuel oil was spilled in the 600 area (PAC 600-152). Clean-up activities resulted in the removal of the oil from various locations at the plant which was subsequently sent to the landfill for disposal. Consideration had been given to the potential pollution problems associated with this disposal method prior to burial in the landfill.<sup>29</sup>

Fill dirt from north and south of the landfill is routinely used for cover. An incident occurred in August 1987 in which stockpiled cover material taken from the area east of the landfill was identified at that time as potentially being from Trenches A, B, and C (PAC NE-166.1, PAC NE-166.2, and PAC NE-166.3). These trenches are designated as IHSSs because they reportedly contained sanitary sewage sludge contaminated with trace amounts of radionuclides. In response to disturbing the IHSSs, the area was roped off and the soil was sampled. All IHSSs within the landfill area were identified in the field with signs and rope.<sup>30,31</sup> No radioactive contamination was identified through the soil analyses. The location of the trenches was re-evaluated in response to this incident, and the mapped locations were moved to the south to correspond with surface soil features that might correspond to disposal trenches (see PAC NE-166.1, PAC NE-166.2, and PAC NE-166.3 for additional detail).

Incidental activities have occurred at the landfill or landfill area which are poorly documented but which should be researched further to determine their significance. One such event was the initiation of burning chromium-contaminated wood near the landfill in May 1975.<sup>32</sup> The source of the wood was from the demolition of the Building 444 cooling tower. This material was size-reduced by supervised controlled burning. The residuum from the chromium-contaminated wood was suspected of also being contaminated with uranium and was shipped offsite as low-level waste.<sup>33</sup>

Various chemicals have been disposed of at the landfill. Unwanted chemicals or chemicals of unknown composition have been disposed of by dumping them on the ground if they were volatile and considered not to harm the groundwater.<sup>34</sup> Other chemicals were ultimately disposed of in the landfill after reaction with neutralizing agents through various processes.<sup>35</sup> Aluminum oxide was disposed of after electrical activation of 10 pounds of thermite powder at the landfill in March 1977.<sup>36</sup> A small fire occurred at the landfill caused by hot ashes from an incinerator in December 1980.<sup>37</sup> These events were considered at the time to not pose a threat to the environment.

### Physical/Chemical Description of the Constituents Released

After the discovery of tritium in the landfill drainage in 1973, actions were taken to sample and analyze surface water and groundwater collected from the wells, leachate collection system, groundwater intercept system, and surface water impoundments.<sup>11</sup> Tritium activity concentrations in surface water were greatest

downgradient of the landfill, with the highest concentration of 91,500 picocuries per liter (pCi/l) in September 1973.<sup>21</sup> From the monitoring wells placed in the landfill to attempt to pinpoint the source, the greatest concentration of tritium activity was found to be 301,509 pCi/l.<sup>22</sup> Tritium activity concentrations for the western pond are available from 1974 through 1980.<sup>23</sup> It was found that the tritium activity concentrations within the landfill decreased to the east. The intercepted groundwater, when analyzed in 1974, was found to have tritium activity concentrations in the range of background values.<sup>23</sup> The surface water collected in the western pond was monitored from the pond's construction until shortly before the pond's removal (burial) in 1981. The tritium activity concentration measured steadily decreased with time and were within measured background values when the pond was removed.<sup>23</sup> Monitoring of tritium activity levels in the surface waters and groundwater in the landfill wells drilled in 1974 ceased in 1981.<sup>23</sup> It was concluded that the tritium source was effectively separated from the environment and was causing no environmental degradation beyond the immediate area of the tritium source.<sup>23</sup> By 1987, no migration of radioactivity had been identified downgradient or laterally from the landfill.<sup>23</sup>

From September 1973 through January 1974, the results of surface water and groundwater monitoring indicated large variations in strontium concentrations. Water-quality data are available from 1973 through 1984 for strontium in landfill ponds. The monitoring for strontium was prompted by erroneous lab results reporting an abnormally high strontium value in samples from September 1973. When re-analyzed, it was determined that the actual strontium concentration was above background but half the value initially identified.<sup>24</sup>

Hazardous waste that routinely went to the landfill included four categories: 1) containers partially filled with paint, solvents, and foam polymers; 2) wipes and rags contaminated with listed hazardous wastes; 3) filters, typically including silicone oil filters, paint filters, and other miscellaneous filters that may have contained hazardous constituents; and 4) metal cuttings and shavings, including mineral and asbestos dust and metal chips coated with hydraulic oil and organic solvents. These were summarized after a 1986 survey of RFP waste streams.<sup>25</sup> Approximately 90 hazardous waste streams were identified in the 1986 survey. This disposal of wastes with hazardous constituents ceased in the fall of 1986.<sup>13</sup>

#### Responses to Operation or Occurrence

In April and May 1973, significant increases in the concentration of tritium activity were detected in water leaving RFP. An extensive search was initiated to determine the source of the tritium release. In the process of identifying the source (later determined not to be related to the landfill), low radioactivity concentrations of tritium activity were detected in the landfill leachate.<sup>26</sup>

In response, fifty-two monitoring wells were drilled into the landfill itself to identify the source of the elevated tritium activity concentrations. Initially, twenty-one test wells were drilled about 25 feet deep and cased with plastic pipe. The pattern of these was a grid of 100-foot spacing down the centerline of the landfill. Samples taken from the wells contained background amounts of tritium activity except for the area of the landfill used in 1970. These tritium activity values were up to 36,000 pCi/l. Additional monitoring wells were drilled in the center area until the source area was identified. It was concluded that the source area, in the area of the landfill active in 1970, would remain in place and the landfill design would be upgraded to prevent the contamination of surface water and groundwater. Contaminated leachate was retained in the ponds.<sup>27</sup> These landfill improvements are identified in the Structure/Construction section above. The 52 monitoring wells (also called environmental test holes) were apparently used only for the period of time immediately after the tritium incident. As landfill operations continued, the wells were covered over with waste or otherwise destroyed. Some of the wells installed in inactive portions of the landfill still remain.

In response to the 1973 tritium incident, daily FIDLER surveys were initiated to detect any radioactive substances in the waste.

When RCRA regulations were implemented at RFP, the landfill was designated as a regulated unit because hazardous waste had been disposed of in it. Because it was a land disposal unit, groundwater monitoring was required. Four wells were installed in the immediate vicinity in 1986; 16 wells in 1987, and 13 wells in 1989 for a total of 33 monitoring wells to monitor the groundwater near and in the landfill. These wells monitored water in both the alluvium and bedrock.<sup>1</sup> Results of groundwater quality analyses are presented in the Annual RCRA Groundwater Monitoring Reports for Regulated Units produced each year at RFP.

In 1978, a survey of some landfill test holes indicated the presence of methane gas.<sup>39</sup> In response, plans were developed to conduct initial identification and quantification of landfill gases. Following the initial work, a routine monitoring program was to be developed if warranted.<sup>40</sup> Preliminary sampling for methane was conducted at two of the test holes. The methane concentrations ranged from 37% to 52% by volume at depths from 2 to 15 feet below the surface. These values were considered typical for landfills.<sup>41</sup> A follow-up survey was conducted in the spring of 1979 with the cooperation of the Colorado Department of Health.<sup>42</sup>

A real time soil-gas survey was conducted at the landfill on September 1 and 2, 1987. Twenty points in the landfill were measured for methane and hydrogen sulfide. Methane was detected in two of the twenty sites at values of 0.2 parts per million (ppm) and 0.4 ppm; hydrogen sulfide was not detected.<sup>1</sup> The utility of the data was questioned because the sampling methodology was not documented and it is suspected that the sampling was not done at the landfill.<sup>1</sup>

#### Fate of Constituents Released to Environment

The surface water diversion ditch and the groundwater interceptor system divert uncontaminated background water around the landfill to prevent degradation of that water by the landfill. Collected leachate is prevented from being released offsite. The groundwater monitoring wells detect and monitor contaminants in the groundwater within, beneath, and around the landfill. The landfill pond is not a NPDES discharge point.

This IHSS is being studied in accordance with the IAG schedule for OU7. The IAG activities will include site investigations, site characterizations, and possible site remediation. The Final Phase I RFWRI Report is to be completed by March 16, 1994.

#### Comments

It is unknown whether the sludge which was placed in the landfill until 1970 was buried in specified trenches within the landfill or placed with other waste as part of routine operations.

All references identified in this study indicated the radioactive materials found were removed and directed toward proper disposal. However, the FIDLER surveys began in 1973<sup>1</sup> and any radioactive materials which may have been disposed of in the landfill prior to that time would not have been detected or removed.

Much more detail about the landfill design and operation is available in the references cited and are summarized here. Information concerning groundwater quality and surface water quality are also available in the references cited.

The boundary for this IHSS is modified from the IAC map to include the East Landfill Pond and reflects the boundaries presented in the Phase I RFI/RJ Workplan.<sup>1</sup>

### References

<sup>1</sup> U.S. DOE, Draft Final Phase I Resource Conservation and Recovery Act Facility Investigation/ Remedial Investigation Work Plan: Rocky Flats Plant: Present Landfill IHSS 114 and Inactive Hazardous Waste Storage Area IHSS 203 (Operable Unit No. 7), August, 1991.

<sup>2</sup> 1500454

<sup>3</sup> 1500793

<sup>4</sup> 1700398

<sup>5</sup> 1501097

<sup>6</sup> 1500564

<sup>7</sup> 1600647

<sup>8</sup> 1502756

<sup>9</sup> 1501192

<sup>10</sup> 1501218

<sup>11</sup> 1503439

<sup>12</sup> 1502790

<sup>13</sup> 1502791

<sup>14</sup> 1600434

<sup>15</sup> 1501118

<sup>16</sup> 1700032

<sup>17</sup> 1600826

<sup>18</sup> 1503438

<sup>19</sup> 1502755

<sup>20</sup> 1500804

<sup>21</sup> 1500764

<sup>22</sup> 1503440

<sup>23</sup> 1502768

<sup>24</sup> 1502703

<sup>25</sup> References that specify radioactive material removed from the landfill:

1500928

1500956

1501094

1501119

1501127

1501132

1501214

1501273

1600209

1600496

1700401

1700403

1700404

1700407

1700414

1700415

<sup>26</sup> 1500504

<sup>27</sup> 1600210

<sup>28</sup> 1501268

29 1501787

30 1600318

31 1600307

32 1500420

33 Personal Communication. D.D. Hombacher, Retired RFP Employee, November 18, 1991.

34 1500473

35 1500511

36 1502784

37 1501196

38 1501790

39 1502783

40 1502782

41 1502781

42 1501233

Other References of Interest:

1500566

1500573

1600428

1500955

S. CONTROL  
RING LTR. NO

F 14398

# EG&G ROCKY FLATS

ST	LTR	EM
...		
D.B.		
C.D.	X	X
L.G.J.		
A.A.	X	X
J.		
P.W.	X	X
D.W.		
L.A.	X	X
J.		
L.K.		
J.		
T.G.	X	X
G.		
E.H.	X	X
A.		
A.W.		
P.		
A.	X	X
E.		
D.M.M.		
A.F.G.		
S.E.J.K.		
E.V.	X	X
M.		
L.	X	X
H.		
L.	X	X
H.H.		
H.A.L.	X	X
H.J.M.	X	X
S.H.	X	X
T.		
N.M.I.		
N.E.H.		
N.H.B.		
J.M.		
S.	X	X
S.	X	X
M.	X	X
S.	X	X
Z.P.	X	X
S.D.	X	X
C.A.	X	X
S.	X	X
R.E.	X	X
S.C.H.L.	X	X

EG&G ROCKY FLATS, INC.  
ROCKY FLATS PLANT, P.O. BOX 464, GOLDEN, COLORADO 80402-0464 • (303) 966-7000

December 15, 1992

92-RF-14398

Colorado Department of Health  
Hazardous Materials and Waste Management Division  
HMWMD-HWC-B2/Frederick R. Dowsett, Phd.  
4300 Cherry Creek Drive South  
Denver, Colorado 80022-1530

### RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) CONTINGENCY PLAN IMPLEMENTATION REPORT NO. 92-023 - TGH-085-92

Enclosed is RCRA Contingency Plan Implementation Report No. 92-023, which documents the status and information concerning the release of approximately 490 gallons of interceptor trench water. Surface water runoff and potentially contaminated groundwater are collected in the Interceptor Trench Pump House (ITPH) system prior to being pumped from the interceptor central sump to 207B North Solar Evaporation Pond. The release originated from a separation of a pipe coupling in the 3" transfer line on the east slope of the 207B North Evaporation Pond berm and flowed onto the surrounding soil.

The release occurred at 1:45 a.m. on Monday, November 30, 1992. The interceptor trench water is managed as RCRA-regulated hazardous waste because the groundwater may contain RCRA-regulated hazardous waste due to the possibility of releases from the liner degradation of the Solar Evaporation Ponds. Based on the results of previous analytical testing, listed hazardous waste constituents have been detected in the interceptor trench water. The material in the Solar Evaporation Ponds has been characterized as RCRA-regulated waste with the following EPA waste codes: D006, F001, F002, F003, F005, F006, F007, and F009. A sample of the interceptor trench water was taken on November 30, 1992, and is currently being analyzed to determine the levels of contaminants in the interceptor trench water at the time of the incident. Preliminary results indicate that the concentration of Contract Lab Protocol (CLP) volatiles is comparable to analytical results of samples taken previously of this stream. No results are available for Toxicity Characteristic Leaching Procedure (TCLP) metals, due to problems with the laboratory equipment. Upon validation of the analytical results, the data will be forwarded to your office.

Your office was notified on November 30, 1992, that the RCRA Contingency Plan had been implemented. The Environmental Protection Agency, Region VIII was notified by facsimile on December 1, 1992.

CLASSIFICATION:

CLASSIFIED	X	X
POTENTIAL		

UNCLASSIFIED

SIGNATURE: *[Signature]* (UNU)

DATE: Dec 10 1992

BY: *[Signature]*

COPIES TO: RFP CC NC

ITEM STATUS

IN  CLOSED

FILED

APPROVALS: *[Signature]*

TYPIST INITIALS: KAM

Frederick R. Dowsett  
December 15, 1992  
92-RF-14398  
Page 2

If you have any questions regarding this subject, please contact the Waste Solidification Operations Manager, J. D. Roberts at 966-3324.



T. G. Hedahl, Associate General Manager  
Environmental and Waste Management  
EG&G Rocky Flats, Inc.

JDR:kam

cc:

D. M. Maxwell - EPA, Region VIII  
B. Brainard - DOE, RFO  
D. Grosek - DOE, RFO  
T. E. Lukow - DOE, RFO  
W. E. Seyfert - DOE, RFO

**RCRA CONTINGENCY PLAN**  
Implementation Report No. 92-023

**RCRA CONTINGENCY PLAN**  
**IMPLEMENTATION REPORT**  
**ROCKY FLATS PLANT**  
EPA ID NUMBER CO7890010526

This report is made in compliance with the requirements of 6 CCR 1007-3, Parts 264.56 (j) and 265.56 (j) for a written report within 15 days of the implementation of the RCRA Contingency Plan. The requirements for this are given below and will be addressed in the order listed, excerpted from 6 CCR 1007-3, Parts 264.56 and 265.56:

"(j)...Within 15 days after the incident, he must submit a written report on the incident to the department. The report must include:

- (1) Name, address, and telephone number of the owner or operator
- (2) Name, address, and telephone number of the facility
- (3) Date, time, and type of incident (fire, explosion)
- (4) Name and quantity of material(s) involved
- (5) The extent of injuries, if any
- (6) An assessment of actual or potential hazards to human health and the environment, where this is applicable; and
- (7) Estimated quantity and disposition of recovered material resulted from the incident."

- 
- (1) Name, address and telephone number of the owner of the facility:

United States Department of Energy  
Rocky Flats Plant  
Post Office Box 928  
Golden, Colorado 80402  
(303) 966-2025

Facility Contact:  
Robert M. Nelson, Jr., Manager

- (2) Name, address and telephone number of the facility:

U.S. Department of Energy  
Rock Flats Plant  
Post Office Box 928  
Golden, Colorado 80402  
(303) 966-2025

( 3 ) Date, time, and type of incident:

A. SUMMARY:

The RCRA Contingency Plan was implemented on November 30, 1992, due a release of approximately 490 gallons of interceptor trench water. Surface water runoff and potentially contaminated groundwater are collected in the Interceptor Trench Pump House (ITPH) system prior to being pumped from the interceptor central sump to 207B North Solar Evaporation Pond. The release originated from a separation of a pipe coupling in the 3" transfer line on the east slope of the 207B North Evaporation Pond berm and flowed onto the surrounding soil that is east and north of Pond 207B North.

The release occurred at 1:45 a.m. on Monday, November 30, 1992. The 2' to 3' long section of the drain hose that was connected to the end of the inlet pipe to the 207B North Pond had frozen during several days of sub zero weather and caused a back pressure in the pipe when the interceptor central sump pump began to pump water into the Pond. The 3" diameter pipe that connects the central sump to 207B North Pond separated (the pipe did not break) at a 3" coupling joint that was installed many years prior to this incident.

The interceptor trench water is managed as RCRA-regulated hazardous waste because the groundwater may contain RCRA-regulated hazardous waste due to the possibility of releases from the Solar Evaporation Ponds. Based on the results of previous analytical testing, listed hazardous waste constituents have been detected in the interceptor trench water. The material in the Solar Evaporation Ponds has been characterized as RCRA-regulated waste with the following EPA waste codes: D006, F001, F002, F003, F005, F006, F007, and F009. A sample of the interceptor trench water was taken on November 30, 1992, and is currently being analyzed to determine the levels of contaminants in the interceptor trench water at the time of the incident. Preliminary results indicate that the concentration of Contract Lab Protocol (CLP) volatiles is comparable to analytical results of samples taken previously of this stream. No results are available for TCLP metals, due to problems with the laboratory equipment. Upon validation of the analytical results, the data will be forwarded to CDH.

The pipe connection has been repaired and the system was placed back into service. The released material was not directly recoverable because it soaked into the soil. Due to the location of the release (upgradient of the ITPH system in an area previously identified to possibly be contaminated due to past releases from the Solar Evaporation Ponds), no action was taken to immediately recover the material. The area impacted by the release will be included in the quarterly update of the Historical Release Report as a recommendation that the impact of this release to the environment be sampled, characterized, and possibly remediated as part of the Interagency Agreement (IAG) activities.

## B. SYSTEM DESCRIPTION:

Originally, two sumps, six trenches and french drains were installed in the 1970's north of the Solar Evaporation Ponds to allow the collection and return of potentially contaminated groundwater to the Solar Evaporation Ponds. This system was installed to maintain the waters in the A-series drainage below the State Public Health Service limit for nitrates in drinking water (10 mg/l). The entire system was operational by 1974. The contaminated ground water was due to seepage of contaminated water from the Solar Evaporation Ponds. In addition, documentation exists stating that overspray from the Solar Evaporation Ponds on windy days contaminated areas to the east with nitrate salts that were entrained in the water from the Solar Evaporation Ponds.

In the early 1980's, the original system was replaced by a more extensive french drain system which is known as the ITPH system. This system was designed primarily to collect subsurface water. The system was extended in 1982 to include a new french drain that paralleled the old Patrol Road. This new french drain was designed and built with gravel backfill from the drain to the surface so that it would collect both groundwater and surface water flow. This extension also provided for the collection of the footing drain flows from Buildings 771 and 774. The present configuration of the ITPH system is shown in Figure 1.

The affected RCRA-regulated system includes: the 3" diameter PVC transfer pipe which connects the interceptor central sump to 207B North Solar Pond (this pipe is about 2,000 feet long) and the east side of the 207B North Solar Pond. The 3" diameter transfer pipe does not have secondary containment. Any leakage from this line would reenter the ITPH system and be collected (again) in the central sump. This area is part of the Solar Ponds that is inspected every twenty-four hours during the required daily RCRA inspection of the Solar Ponds.

The interceptor trench collection system, including the interceptor trench sump and pump are not managed as a RCRA-regulated system because a determination has been made that the groundwater does not meet the definition of a solid waste (or hazardous waste) until the water is removed from its natural state. The point of regulation has been designated at the discharge of the pump.

## C. DESCRIPTION OF INCIDENT:

A 20-foot section of a 3" diameter, flexible hose had been attached to the end of the interceptor trench water transfer pipe that is installed from the central sump to the 207B North Solar Evaporation Pond. Normally, the central sump pumps operate automatically (controlled by level sensors in the sump) and the water remaining in the pipe at the end of the pumping cycle, drains back by gravity to the sump. In this case, however, the hose at the 207B end of the transfer pipe was looped in such a way that a small volume of water was trapped within the hose. The freezing temperatures on the night of the occurrence created a plug in the hose. At approximately 1:45 a.m., on November 30, 1992, the pumps cycled on and

due to the presence of the freeze plug, pressurized the transfer line causing the separation of the pipe coupling. This coupling was connected at ground level near the top of the east side of the 207B North Pond berm. The transfer line separated at a pipe coupling allowing a release of interceptor trench water down the east slope of the 207B Pond. It is estimated that approximately 490 gallons of interceptor trench water was released. The estimate of quantity released is based on process knowledge that the sump pump typically operates for 7 minutes and is capable of pumping 70 gallons per minute. The released material spread over a large area (approximately 50 feet by 80 feet) directly east of 207B North Solar Evaporation Pond and was not directly recoverable.

As a contributing cause, the investigation revealed that the separated joint had not been properly made during the installation. The wrong type and an inadequate amount of glue had been used (the pipe is constructed of PVC) and the coupling was not installed properly when it was first installed many years ago.

The on-site investigation has also revealed that construction and installation of a pipe used to pump water from the Solar Ponds to Building 910 that was completed in early 1992 may have contributed to the coupling separation. This pipe is approximately ten inches in diameter. This pipe was installed perpendicular to and directly under the 3" interceptor trench water transfer line. The rigid 3" diameter discharge inlet pipe was moved and raised to a position approximately ten inches above the original installation during the 1992 construction and installation. This activity exerted a force on the coupling joint. It is highly probable that this movement of the discharge pipe during construction in 1992 and the contributing cause that the wrong type and inadequate amount of glue used to secure the coupling to the discharge pipe were responsible for the discharge pipe separating under pressure on November 30, 1992, because the pressure rating of the drain hose, PVC coupling and the PVC pipe far exceeds the discharge pressure capability of the Central Sump Pump.

#### D. CORRECTIVE ACTION

The interceptor sump pump was de-energized immediately after the leak was discovered. Personnel disconnected the drain hose from the end of the pipe and reinstalled the pipe. A water tight rubber-to-steel coupling clamp was installed on the pipe to allow continued operation of the Central Sump System. The pump was re-energized and the run-off collection system was returned to normal operation. The coupling clamp is being inspected every four hours until the weather temperature increases to allow a permanently cemented 3" diameter coupling be installed at the pipe joint.

An analysis of the water is being performed, but it is likely that the potentially contaminated groundwater was diluted from snow melting on the grounds above the ITPH system and, therefore, may not contain any detectable hazardous constituents.

As part of the Solar Pond Remediation Project, modular storage tanks were included to collect the interceptor trench water instead of transferring the liquid to the Solar Evaporation Ponds. This project is currently being constructed. This system would connect to the ITPH with new secondary contained transfer pipe. The project schedule to place the modular tanks into service has recently been expedited with a target completion date of February 5, 1993.

**( 4 ) JUSTIFICATION FOR CONTINUED OPERATION IN NONCOMPLIANCE:**

Operation of the ITPH was not shut down because there is no other operational alternative for collecting of the interceptor trench water. If the transfer line is not used, the interceptor trench water sump would overflow and result in a release of interceptor trench water downstream of the ITPH system. This release of potentially contaminated groundwater would flow into the A-series drainage.

**( 5 ) NAME AND QUANTITY OF MATERIAL INVOLVED:**

The interceptor trench water is managed as RCRA-regulated hazardous waste because the groundwater may contain RCRA-regulated hazardous waste due to the possibility of releases from the Solar Evaporation Ponds. Based on the results of previous analytical testing, listed hazardous waste constituents have been detected in the interceptor trench water. The material in the Solar Evaporation Ponds has been characterized as RCRA-regulated waste with the following EPA waste codes: D006, F001, F002, F003, F005, F006, F007 and F009. A sample of the interceptor trench water was taken on November 30, 1992, and is currently being analyzed to determine the levels of contaminants in the interceptor trench water at the time of the incident. The average of analytical results from samples taken during 1991 and 1992 are presented in Table 1. Preliminary results of the interceptor trench water samples taken indicate that the concentration of CLP volatiles is comparable to analytical results of samples taken previously of this stream. No results are available for TCLP metals, due to problems with the laboratory equipment. Upon validation of the analytical results, the data will be forwarded to the Colorado Department of Health.

Table 1

	Mean* ug/l	Standard Deviation	Maximum Detected	Number of Detects	Number of Samples
Cadmium	1.84*	0.81	7.50 U	0	24
Chromium	9.84	11.10	32.50	8	26
Lead	1.23	0.80	3.60	2	28
Mercury	0.15	0.13	0.63	4	27
Silver	3.93	2.56	11.10	2	22
Carbon Tetrachloride	2.58	1.85	11.00	1	25
Toluene	2.50*	0.00	5.00 U	0	25
Trichloroethene	3.02	1.20	7.00	2	26

\* Mean calculated using half the detection limit for concentrations at the detection limit

U = Analyzed but not detected

(6) EXTENT OF INJURIES:

There were no injuries.

(7) AN ASSESSMENT OF ACTUAL OR POTENTIAL THREAT TO HUMAN HEALTH AND ENVIRONMENT:

Results of the laboratory analysis of the interceptor trench water are pending; however, it is believed that the majority of the water is from snow melt on the hillside north of the Solar Evaporation Ponds. The release occurred in an area which had been previously identified to possibly be contaminated with materials from the Solar Evaporation Ponds; therefore, it is believed that the impact of this release has not significantly increased the level of contamination present in this area. In addition, the release occurred within the area from which surface and subsurface water drainage would be captured by the ITPH system; therefore, a release of contaminants from the plant site is unlikely.

(8) ESTIMATE QUANTITY AND DISPOSITION OF RECOVERED MATERIAL THAT RESULTED FROM THE INCIDENT:

Approximately 490 gallons of interceptor trench water was released to the east exterior side of the berm and flowed east and north within the area covered by the ITPH system. The released material was not directly recoverable because it soaked into the soil. Due to the location of the release (upgradient of the ITPH system in an area previously identified to possibly be contaminated due to past releases from the Solar Evaporation Ponds), no action was taken to immediately recover the material. The area impacted by the release will be included in the quarterly update of the Historical Release Report as a recommendation that the impact of this release to the environment be sampled, characterized, and possibly remediated as part of the IAG activities.

APPROXIMATE LOCATION OF FRENCH DRAIN SYSTEM

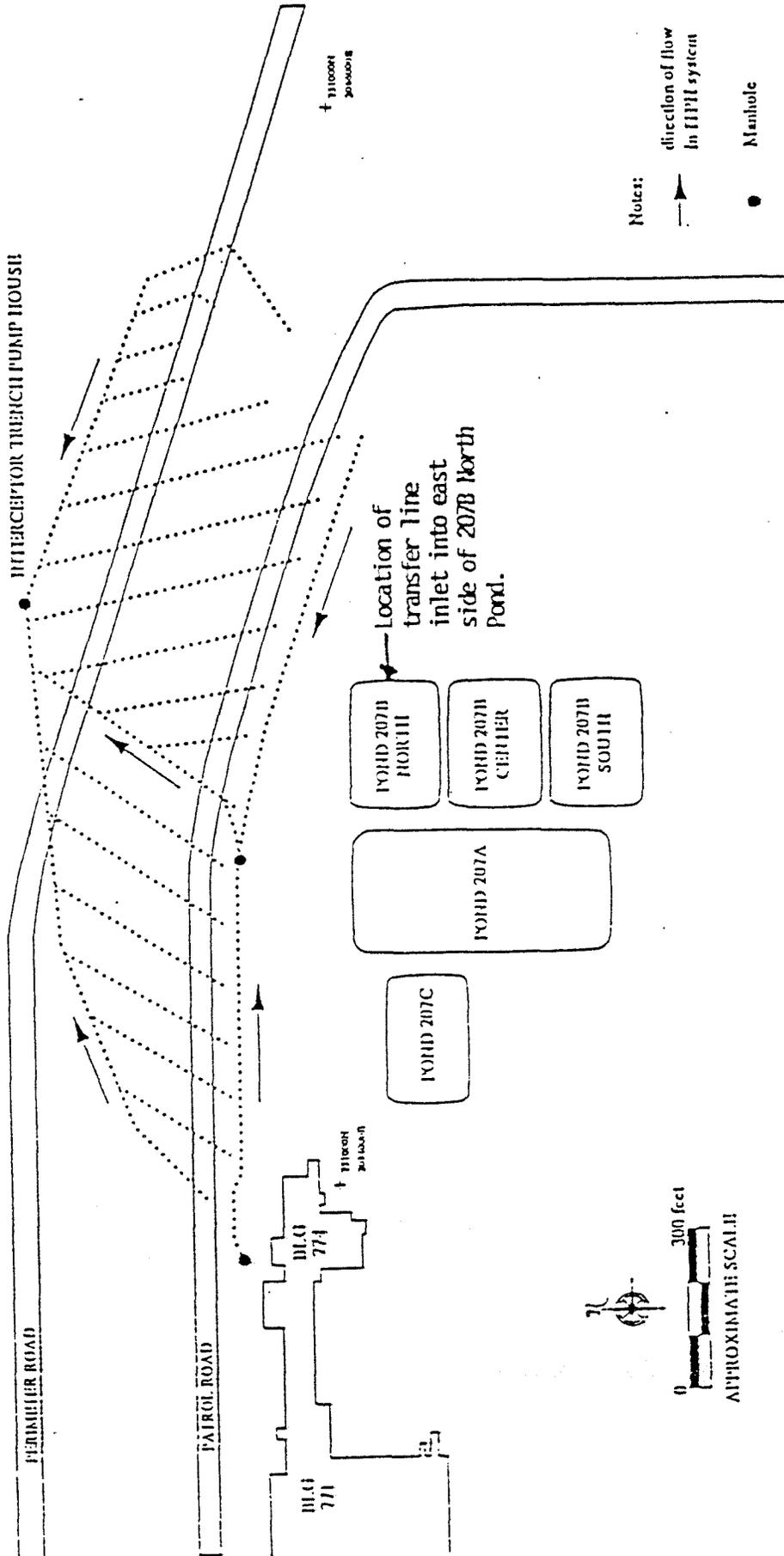


FIGURE 1

)

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## INTEROFFICE CORRESPONDENCE

DATE: October 16, 1992

TO: Distribution

FROM:  A. L. Schubert, Waste Programs, Bldg. T130C, X5251

SUBJECT: HAZARDOUS SUBSTANCES RELEASE REPORT - 1992 SECOND QUARTER REPORT - ALS-408-92

Please find attached the Hazardous Substances Release Report for the time period of July, 1991, through June, 1992. The report is divided into four sections: 1) Offsite Regulatory Notifications, 2) Root Cause Analysis, 3) Release Graphics and 4) Special Topics. Please route this to all personnel with responsibility for release investigations and/or conducting critique meetings.

For the purpose of this report only, the term **hazardous substance** includes any element, compound, mixture, solution or substance that may endanger human health or the environment including hazardous substances (which include radionuclides) as defined by 40 CFR Part 302, extremely hazardous substances as defined by 40 CFR Part 355, hazardous materials as defined by 49 CFR Part 173, hazardous waste as defined by 40 CFR Part 265, oil and petroleum products (including antifreeze), and nonhazardous substances (e.g. water) contaminated by hazardous constituents.

A **release** includes any spilling, leaking, pumping, pouring, emitting, emptying, discharging or dumping of a hazardous substance **inside any building/containment or to the environment**. Release also includes the abandonment or discarding of barrels, containers, and other closed receptacles of any hazardous substance. The discovery of accumulated liquids within secondary containment for RCRA-regulated systems, that appear to be waste-like in nature or have been analytically tested and verified to be a solid or hazardous waste, have also been included in this report.

An **Internally reportable release** includes all solid and liquid releases of hazardous substances equal to or greater than one pound (one pint for aqueous liquids) and **all gaseous** releases that occur inside or outside buildings or containments. These releases must be reported to the Shift Superintendent and the Occurrence Notification Center (ONC). In addition, all reported mercury spills (including releases less than one pound, approximately 2 1/2 teaspoons) are included in the database. Waste Regulatory Programs is then responsible for evaluating if additional reporting is required to offsite regulatory agencies.

A **release reportable to the Department of Energy, Rocky Flats Office (DOE, RFO)** is any release that has been categorized and reported to DOE, RFO as an Off-Normal, Unusual, or Emergency-occurrence as defined by DOE Order 5000.3A.

Releases from **privately owned vehicles (POVs)** have been specifically identified in the charts. Releases that occur inside of a building are labeled as Bldg-XXX (reference the releases by location charts). All other spills (including releases identified Bldg-XXX Vicinity) occurred outside a building.

### Offsite Regulatory Notifications

This section of the report documents the occurrences for which the RCRA Contingency Plan was implemented, an Environmental Release Report was generated or notifications were made to the EPA National Response Center (NRC), State Emergency Response Commission (SERC) and/or Local Emergency Planning Committees (LEPC). Our number one goal is to reduce these occurrences and to *minimize the threat to human health and the environment.*

When the RCRA Contingency Plan is implemented, a report is filed with DOE, the Colorado Department of Health (CDH), and the Environmental Protection Agency (EPA), Region VIII. The plantsite is required to implement the plan whenever there is a fire, explosion or release of hazardous waste or hazardous waste constituents which could threaten human health or the environment.

Specifically at the Rocky Flats Plant (RFP), the RCRA Contingency Plan is implemented whenever there is a release of regulated hazardous waste greater than one pound (or one pint of aqueous liquids) if the release is outside containment. For releases inside containment, the plan is implemented if more than the CERCLA equivalent quantity of regulated waste is released. The plan is also implemented if a release (of any size) from a RCRA-regulated tank system is not cleaned up within 24 hours. In addition, The RCRA Contingency Plan is implemented if there is a fire, explosion or similar event involving a hazardous waste release or an active hazardous waste management unit.

As of July 19, 1991, releases of petroleum products have been evaluated to determine if the resultant waste contained any hazardous waste constituents. If no written documentation is available to demonstrate that the specific petroleum product does not contain any hazardous waste constituents, the material resulting from clean up of a release must be managed as RCRA-regulated hazardous waste.

As of September 1, 1991, any release of ethylene glycol (including antifreeze) that equals or exceeds the reportable quantity of one pound (two pounds of a mixture of 50% antifreeze and 50% water) must be reported to the NRC. As of June 4, 1992, ethylene glycol spills that are reported to the NRC are not reportable to DOE, RFO (through the occurrence reporting process) unless 100 pounds (approximately 24 gallons of a mixture of 50% antifreeze and 50% water) or more has been released to the environment.

### Cause Analysis

This section of the report is designed to assist the plantsite in reducing the number of spills/releases by improving the control systems. These control systems are divided into Personnel, Procedures and Equipment. Not Investigated refers to spills/releases for which insufficient information is available or manpower is not available. All spills/releases equal to or exceeding one pound liquid or solid are evaluated as to the primary failure mode. All confirmed gas releases are investigated on a case-by-case basis. A new category has been included in the cause analysis to address releases from privately owned vehicles. Typically, these occurrences were not investigated due to the nature of the occurrence. A formal root cause determination is performed by the responsible Operations Manager for all releases that were reported to DOE, RFO through the Occurrence Reporting Process.

WRP requests that Operations Managers continue to investigate the cause of every reportable release and to initiate corrective action which will preclude any recurrence. Based on the cause analysis documented in this report, 27 incidents were caused by a lack of attention and 19 incidents were caused by maintenance deficiency.

### Release Graphics

This section of the report is a two-part package which displays data in three different ways for releases occurring on the plantsite. Both parts of the package sort the data according to location, substance and month. The difference in the two packages is that the first includes all of the releases of hazardous substances which were reported for the entire plantsite for a 12-month period. The second package limits the data to those releases occurring outside buildings or containment structures for the same time period.

Outside releases are immediate threats to human health and the environment and should, therefore, be targeted for serious corrective measures. The data includes releases greater than or equal to one pound (or one pint for aqueous liquids). Additionally, all known releases of mercury have been included in the database. The release graphics have been revised to specifically identify the releases from POVs.

### Special Topics

This section of the report includes information clarifying release reporting requirements. For example, a buildup of crystalline material on flange connections or fittings is considered a release and may be reportable to offsite regulatory agencies if the release is associated with the RCRA interim status or 90-day storage tank system. The release must be reported to the Shift Superintendent if one pound (or one pint aqueous liquid) or more is released or a release from a RCRA-regulated waste tank system has not been cleaned up within 24 hours. All releases from RCRA interim status or 90-day storage tank systems must be cleaned up within 24 hours.

In addition, a release of liquids into plastic wrap covering ancillary equipment (e.g., piping, valves, flanges) is considered a reportable release from the primary containment if: 1) one pound (or one pint of aqueous liquids) or greater of RCRA-regulated waste is released into the plastic; or 2) if the liquid from a RCRA-regulated tank is not cleaned up within 24 hours.

Additionally, any discovery of accumulated liquids within a secondary containment for a RCRA-regulated system must be cleaned up within 24 hours. If it is not cleaned up within 24 hours, a determination must be made as to whether the liquid is a RCRA-regulated waste. If this determination cannot be made, the RCRA Contingency Plan may have to be implemented. If the accumulated liquids are known to be non-hazardous and the material has not been cleaned up within 96 hours, then this noncompliance must be reported to DOE, RFO through the Occurrence Reporting process.

A release from primary containment (e.g. piping, tanks, valves, pumps, etc.) of one pound (one pint aqueous liquids) or more of hazardous substance which is contained within a glovebox should be reported to the Shift Superintendent unless the release is associated with in-process accumulation of material.

However, a release of RCRA-regulated hazardous waste from primary containment that is fully contained within a glovebox does not require implementation of the RCRA Contingency Plan because the release did not impact health or the environment. A release of hazardous waste that is not fully contained within the glovebox may require implementation of the RCRA Contingency Plan.

A release within a glovebox that results in a hazardous waste could result in a noncompliance with RCRA regulations concerning storage of hazardous waste in approved accumulation areas. A case-by-case assessment of the release must be completed by Waste Technical Support (previously known as Waste Area Engineering) to evaluate if the release resulted in noncompliant storage of a hazardous waste or if the release is associated with in-process accumulation of material.

If you have any questions or would like more information, please contact M. L. Johnson at extension 5033 or digital pager 1028, or B. B. Haynes at extension 7754. If, in the future, you do not wish to receive a copy of this report, please notify either person.

MLJ:kam

Attachment:  
As Stated

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## HAZARDOUS SUBSTANCE RELEASES

### OFFSITE REGULATORY NOTIFICATIONS

#### RCRA Contingency Plan Implementation Reports - July 1991 through June 1992

<u>REPORT NUMBER</u>	<u>DATE OF RELEASE</u>	<u>AMOUNT RELEASED</u>	<u>MATERIAL RELEASED and COMMENTS</u>
91-004	7-9-91	3 quarts	<b>MATERIAL RELEASED:</b> spent battery acid that might contain toxic levels of cadmium (D006)  A release from an overturned waste Ni-Cad battery outside of Building 119.
91-005	7-17-91	1 quart	<b>MATERIAL RELEASED:</b> diesel fuel (1)  A release onto soil from an above ground storage tank located near Cooling Tower No. 109.
91-006	8-5-91	1 quart	<b>MATERIAL RELEASED:</b> gasoline (1)  A release onto asphalt surface from a portable lighting generator in the parking area east of Building 920 Guard Post.
91-007	7-28-91	2 gallons	<b>MATERIAL RELEASED:</b> waste Kathene solution containing toxic levels of chrome (D007)  A release from a Kathabar dehumidifier system inside Building 707, employee knocked over bucket.
91-008	8-2-91	100 gallons	<b>MATERIAL RELEASED:</b> waste Kathene solution containing toxic levels of chrome (D007)  A release from a Kathabar dehumidifier system due to overflowing recirculation tanks inside Building 707 as a result of a malfunction during testing.
91-009	8-9-91	50 gallons	<b>MATERIAL RELEASED:</b> waste Kathene solution containing toxic levels of chrome (D007)  A release from a Kathabar dehumidifier system due to overflowing the recirculation tanks inside Building 707 as a result of operator error.

(1) As of October 31, 1991, the RCRA Contingency Plan was modified to limit reporting of release of hazardous waste. Prior to this change, release of hazardous substances that resulted in a hazardous waste required implementation of the Plan.

91-010	8-14-91	2 gallons	<b>MATERIAL RELEASED:</b> waste Kathene solution containing toxic levels of chrome (D007)  A release when solution overflowed a drain inside Building 707 during transfer operations to empty tanks.
91-011	8-14-91	2 quarts	<b>MATERIAL RELEASED:</b> antifreeze (1)  A release onto asphalt surface from a private vehicle in the parking lot south of Building 130D.
91-012	8-23-91	1-1/2 pint	<b>MATERIAL RELEASED:</b> antifreeze (1)  A release onto asphalt surface from a private vehicle in the parking lot north of Building 771.
91-013	8-23-91	3 quart	<b>MATERIAL RELEASED:</b> antifreeze (1)  A release onto asphalt surface from a private vehicle in the parking lot east of Building 111.
91-014	8-26-91	2 quarts	<b>MATERIAL RELEASED:</b> hydraulic oil (1)  A release from a sub-contractor vehicle onto the soil south of Building 250.
91-015	8-26-91	1 quart	<b>MATERIAL RELEASED:</b> motor oil (1)  A release in the parking lot and soil north of Guard Post, source of release is unknown.
91-016	8-28-91	750 gallons	<b>MATERIAL RELEASED:</b> aqueous waste (containing waste Kathene solution with toxic levels of chromium )(D007)  A release from overfilling a RCRA-regulated process waste tank (#651) inside Building 731 due to failure of tank high level
91-017	8-29-91	1 quart	<b>MATERIAL RELEASED:</b> compressor oil (1)  A release onto asphalt surface west of Building 865 from an air compressor during routine oil change.

(1) As of October 31, 1991, the RCRA Contingency Plan was modified to limit reporting of release of hazardous waste. Prior to this change, release of hazardous substances that resulted in a hazardous waste required implementation of the Plan.

91-018	8-30-91	2 gallons	<b>MATERIAL RELEASED:</b> gasoline (1)  A release from a contractor's gasoline supply vehicle onto asphalt surface north of Building 331.
91-019	9-4-91	3 gallons	<b>MATERIAL RELEASED:</b> transmission fluid (1)  A release from a contractor vehicle onto asphalt surface east of Building 131.
91-020	9-12-91	1 gallon	<b>MATERIAL RELEASED:</b> hydraulic oil (1)  A release from a contractor backhoe to the soil west of Building 115.
91-021	9-17-91	1 gallon	<b>MATERIAL RELEASED:</b> hydraulic oil (1)  A release from a trash truck onto asphalt surface south of Building 125.
91-022	9-24-91	10 gallons	<b>MATERIAL RELEASED:</b> hydraulic oil (1)  A release from a trash truck to the soil and asphalt during transit from an area southwest of the 904 Pad to the parking lot at Building 331.
91-023	9-27-91	7 quart	<b>MATERIAL RELEASED:</b> antifreeze (1)  A release from a private vehicle onto asphalt surface in the Building 334 parking lot.
91-024	9-30-91	1/2 gallon	<b>MATERIAL RELEASED:</b> gasoline (1)  A release from a private vehicle onto asphalt surface in the north parking lot of the 130 trailer complex.
91-025	10-10-91	1 gallon	<b>MATERIAL RELEASED:</b> antifreeze (1)  A release from a private vehicle onto asphalt surface at the north entrance to Portal 1.

(1) As of October 31, 1991, the RCRA Contingency Plan was modified to limit reporting of release of hazardous waste. Prior to this change, release of hazardous substances that resulted in a hazardous waste required implementation of the Plan.

91-026	10-9-91	5 gallons	<b>MATERIAL RELEASED:</b> decontamination water (containing trace levels of solvents)(F002)  A release from a tanker <b>onto asphalt road surfaces</b> during transport from the decontamination pad to Building 231 tanks.
91-027	10-11-91	1-1/2gallon	<b>MATERIAL RELEASED:</b> antifreeze (1)  A release <b>onto asphalt surface</b> from a private vehicle in the parking lot east of Building 886.
91-028	10-17-91	1/2 gallon	<b>MATERIAL RELEASED:</b> gasoline (1)  A release from a private vehicle <b>onto the soil</b> in the ditch east of the 555 power station.
91-029	10-21-91	1-1/2 gallon	<b>MATERIAL RELEASED:</b> motor oil (1)  A release from an air compressor <b>onto the pavement</b> north of Building 440 due to over pressurization of the oil reservoir, forcing oil out through dipstick tube which had not been closed properly.
91-030	10-22-91	N/A	<b>MATERIAL RELEASED:</b> N/A  Lack of adequate secondary containment of the laundry waste tank (T-4) in Building 732.
91-031	10-25-91	1/2 gallon	<b>MATERIAL RELEASED:</b> antifreeze (1)  A release from street sweeper to the <b>pavement</b> north of Building 331.
91-032	10-29-91	1 quart	<b>MATERIAL RELEASED:</b> motor oil (1)  A release from a private vehicle <b>onto asphalt surface</b> on the parking lot for Building 441.
91-033	10-29-91	3 gallons	<b>MATERIAL RELEASED:</b> automatic transmission oil (1)  A release from an air compressor <b>onto the ground</b> northwest of Building 443.

(1) As of October 31, 1991, the RCRA Contingency Plan was modified to limit reporting of release of hazardous waste. Prior to this change, release of hazardous substances that resulted in a hazardous waste required implementation of the Plan.

91-034	10-21-91	one cup	<p><b>MATERIAL RELEASED:</b> salts (caustic) (D002)</p> <p>A release was not cleaned up within 24 hours from a RCRA-regulated tank (T-2) in Building 883.</p>
91-035	12-16-91	40 gallons	<p><b>MATERIAL RELEASED:</b> TRIM™SOL lubricant mixed with waste oil (generator declared hazardous waste)</p> <p>A release from a leaking drum inside a cargo container in RCRA storage unit #1.</p>
92-001	1-29-92	1/2 gallon	<p><b>MATERIAL RELEASED:</b> aqueous waste that might have contained D004, D005, D007, D008, D011, F001, F002, F003, F007, F008, F009</p> <p>A release from the primary transfer pipe (which is RCRA-regulated) into the secondary pipe between Buildings 881 and 887.</p>
92-002	1-29-92	1 quart	<p><b>MATERIAL RELEASED:</b> spent battery acid that might contain toxic levels of cadmium (D006)</p> <p>A release outside Building 373 from used Ni-Cad batteries during storage prior to disposal.</p>
92-003	2-17-92	N/A	<p><b>MATERIAL RELEASED:</b> N/A</p> <p>Lack of adequate secondary containment for RCRA-regulated hazardous storage tanks (T-2, T-3 and T-5) in Building 444</p>
92-004	2-26-92	14 filters	<p><b>MATERIAL RELEASED:</b> used oil filters containing toxic levels of lead (D008)</p> <p>Inadvertent disposal of 14 filters into the sanitary landfill. Analysis is being conducted to establish if the filters should be managed as RCRA-regulated waste.</p>
92-005	4-16-92	35 gallons	<p><b>MATERIAL RELEASED:</b> accumulated liquids</p> <p>Waste within a secondary containment system for B-866 waste collection tanks (RCRA Unit Nos. 40.17, 40.18, 40.19, 40.32 and 40.33) that had not been removed within 24 hours. The waste collected in these tanks had been characterized to contain D001, D002, D004, D005, D006, D007, D008, D011, F001, F002, F003</p>

92-006	4-14-92	5-6 gallons	<b>MATERIAL RELEASED:</b> accumulated liquids (sump in B-444/447)
			Lab analysis proved no RCRA-regulated waste present, but operations of RCRA-regulated tank system continued with "unfit-for-use" secondary containment.
92-007	4-24-92	< 50mL	<b>MATERIAL RELEASED:</b> acidic solution (D002, D006, D007, D008)
			A release from a mixed residue tank (D1804) in B-771 containing nitric acid contaminated with Plutonium was not cleaned up within 24 hours.
92-008	4-24-92	<50 mL	<b>MATERIAL RELEASED:</b> acidic solution (D002, D006, D007, D008)
			A release from a mixed residue tank (D160A) in B-371 containing hydrochloric acid and potassium hydroxide was not cleaned up within 24 hours.
92-009	4-29-92	N/A	<b>MATERIAL RELEASED:</b> N/A
			No RCRA-regulated waste present, but operations of the RCRA-regulated tank system continue in B-779 with "unfit-for-use" secondary containment.
92-010	5-8-92	< 20 mL	<b>MATERIAL RELEASED:</b> caustic solution (D002, D006, D007, D008)
			A release from a mixed residue tank system (D400A and D400C) in B-371, room 1115, was not cleaned up within 24 hours. The release was captured within the double plastic wrap covering the ancillary equipment.
92-011	5-8-92	< 3 mL	<b>MATERIAL RELEASED:</b> N/A
			Process knowledge established the release from a tank (D1414) in B-771, room 181A to be ferrous sulfate which is not a RCRA-regulated waste. The tank had been erroneously identified as a mixed residue tank; the release was not cleaned up within 24 hours even though it was contained within plastic wrap covering the ancillary equipment.

92-012	5-8-92	< 1 pint	<p><b>MATERIAL RELEASED:</b> caustic solution (D002, D006, D007, D008)</p> <p>A release from a mixed residue tank system (D2A and D2B) in B-371, room 1115, was not cleaned up within 24 hours. The release was contained within a glovebox.</p>
92-013	5-20-92	30 gallons	<p><b>MATERIAL RELEASED:</b> process aqueous waste (containing chromium)(D007)</p> <p>Operation of the RCRA regulated 90-day tank systems in B-731 with "unfit-for-use" secondary containment was continued and spill material was not removed within 24 hours.</p>
92-014	5-24/26-92	1386 gallons	<p><b>MATERIAL RELEASED:</b> caustic solution (based on analytical results completed after release, material released was not RCRA-regulated hazardous waste)</p> <p>A release from a liquid process RCRA-regulated waste line in B-371, room 1117 was not cleaned up within 24 hours.</p>
92-015	6-1-92	45-60 gal	<p><b>MATERIAL RELEASED:</b> accumulated liquid (based on analytical results completed after release, material released was not RCRA-regulated hazardous waste)</p> <p>The secondary containment system for the 90-day RCRA regulated waste collection tanks in B-528 is "unfit-for-use" due to a 2-inch crack in the fiber glass liner of the sump pit.</p>
92-016	6-2-92	2-3 gallons	<p><b>MATERIAL RELEASED:</b> accumulated liquid (based on analytical results completed after release, material released was not RCRA-regulated hazardous waste)</p> <p>A release of process aqueous waste from RCRA-regulated ancillary equipment into the secondary containment system (the process waste transfer line within B-123). The release was not cleaned up within 24 hours.</p>
92-017	6-10-92	50 gallons	<p><b>MATERIAL RELEASED:</b> oil/solvent mixture that might have contained D001, D004, D018, D019, D028, D029, D035, D038, D040, D043, F001, F003</p> <p>A release from a waste tank in B-774, room 210, that was not cleaned up within 24 hours.</p>

92-018    6-16-92    67 gallons    **MATERIAL RELEASED:** accumulated liquid (based on analytical results completed after release, material released was not RCRA-regulated hazardous waste)

Accumulated liquids (process aqueous waste) were removed from the sump in B-883 and pumped into RCRA regulated tank A-24. The secondary containment for the sump had been determined to be inadequate.

Environmental Release Report to LEPC or SERC

None for July, 1991 through June, 1992.

EPA National Response Center Notification

Reported by DOE	9-27-91	7 quart	<b>MATERIAL RELEASED:</b> antifreeze  A release from a private vehicle <b>onto asphalt surface</b> in the Building 334 parking lot.
Reported by DOE	10-10-91	1 gallon	<b>MATERIAL RELEASED:</b> antifreeze  A release from a private vehicle <b>onto asphalt surface</b> at the north entrance to Portal 1.
Reported by DOE	10-11-91	1-1/2 gal	<b>MATERIAL RELEASED:</b> antifreeze  A release <b>onto asphalt surface</b> from a private vehicle in the parking lot east of Building 886.
93901	10-25-91	1/2 gallon	<b>MATERIAL RELEASED:</b> antifreeze  A release from street sweeper to the <b>pavement north of Building 331.</b>
102789	1-14-92	1 quart	<b>MATERIAL RELEASED:</b> antifreeze  A release from a private vehicle <b>onto asphalt surface</b> at the parking lot west of 904 Pad. Release is reportable under 40 CFR 302.4.
106453	2-11-92	6 quarts	<b>MATERIAL RELEASED:</b> antifreeze  A release from a private vehicle <b>onto the asphalt road</b> (Central Avenue) due to a ruptured radiator hose.

106811	2-14-92	1 gallon	<b>MATERIAL RELEASED:</b> antifreeze  A release from a private vehicle onto asphalt surface which flowed to soil between T690B and T690C.
107772	2-22-92	2 quarts	<b>MATERIAL RELEASED:</b> antifreeze  A release from a private vehicle onto asphalt surface at the parking lot by T130D.
113123	4-5-92	< 1 gallon	<b>MATERIAL RELEASED:</b> diesel fuel  A release from a diesel powered pump to soil and surface water at Pond B5. The release resulted in a sheen of oil on navigable water which is reportable under 40 CFR 110.10.
114891	4-20-92	1 gallon	<b>MATERIAL RELEASED:</b> antifreeze  A release from a private vehicle onto asphalt surface at parking lot east of B-119.
115386	4-22-92	2-3 gallons	<b>MATERIAL RELEASED:</b> antifreeze  A release from a front-end loader to soil at construction site.
115727	4-26-92	< 1 gallon	<b>MATERIAL RELEASED:</b> antifreeze  A release from a private vehicle onto asphalt surface in a parking lot between B-111 and B-113.
118275	5-18-92	~ 1/2 gallon	<b>MATERIAL RELEASED:</b> antifreeze  A release from a private vehicle onto asphalt surface in the 123 parking lot.
118622	5-20-92	~ 1/2 gallon	<b>MATERIAL RELEASED:</b> antifreeze  A release from a private vehicle onto asphalt surface in the parking area of B-334.
120608	6-5-92	2 quarts	<b>MATERIAL RELEASED:</b> antifreeze  A release from a private vehicle onto asphalt surface in the parking area west of B-060.

123209    6-22-92    50 gallons    The National Response Center was notified of a release of possibly contaminated ground water; however, upon further investigation and analytical testing, the material was characterized as non-hazardous.

NOTE 1:    All releases reportable under 40 CFR 302.4.

NOTE 2:    Assume antifreeze contains 50 % ethylene glycol and 50 % water. Reportable quantity to National Response Center for ethylene glycol is 1 pound; therefore, the reporting level for an antifreeze mixture is 2 pounds or approximately 1 quart.

NOTE 3:    Amounts listed in table are approximate estimates of quantity released.

## CAUSE ANALYSIS

Cause Analysis seeks to identify the basic cause and effect relationship of a spill. The goal of the analysis is to prevent the possibility of future spills by eliminating the known causes of today's spills. The following is a rudimentary analysis of the 12-month period from July 1991 through June 1992. The purpose is to emphasize the weaknesses so that we can focus our collective attention on preventing future, similar incidents. It should be noted that a specific incident may have more than one root cause. In addition, a formal cause analysis is completed by the responsible Operations Manager for any release that is reportable to DOE, RFO.

<u>TYPE OF ERROR</u>	<u>NUMBER OF INCIDENTS</u>	<u>RELATIVE PERCENT</u>
<u>Personnel</u>	<u>41</u> .....	<u>23.8</u>
Procedure Not Followed	1 .....	0.6
Training Deficiency	4 .....	2.3
Lack of Attention	27 .....	15.7
Programmatic Deficiency	5 .....	2.9
Communication Deficiency	4 .....	2.3
<u>Procedural</u>	<u>4</u> .....	<u>2.3</u>
Incomplete/Nonexistent	4 .....	2.3
Incorrect Information	0 .....	0.0
<u>Equipment</u>	<u>70</u> .....	<u>40.7</u>
Design Deficiency	14 .....	8.1
Maintenance Deficiency	19 .....	11.1
Premature Wearout	17 .....	9.9
Installation/Mfg Deficiency	3 .....	1.7
Other	17 .....	9.9
<u>Privately Owned Vehicles</u>	<u>28</u> .....	<u>16.3</u>
<u>Not Investigated</u>	<u>29</u> .....	<u>16.9</u>

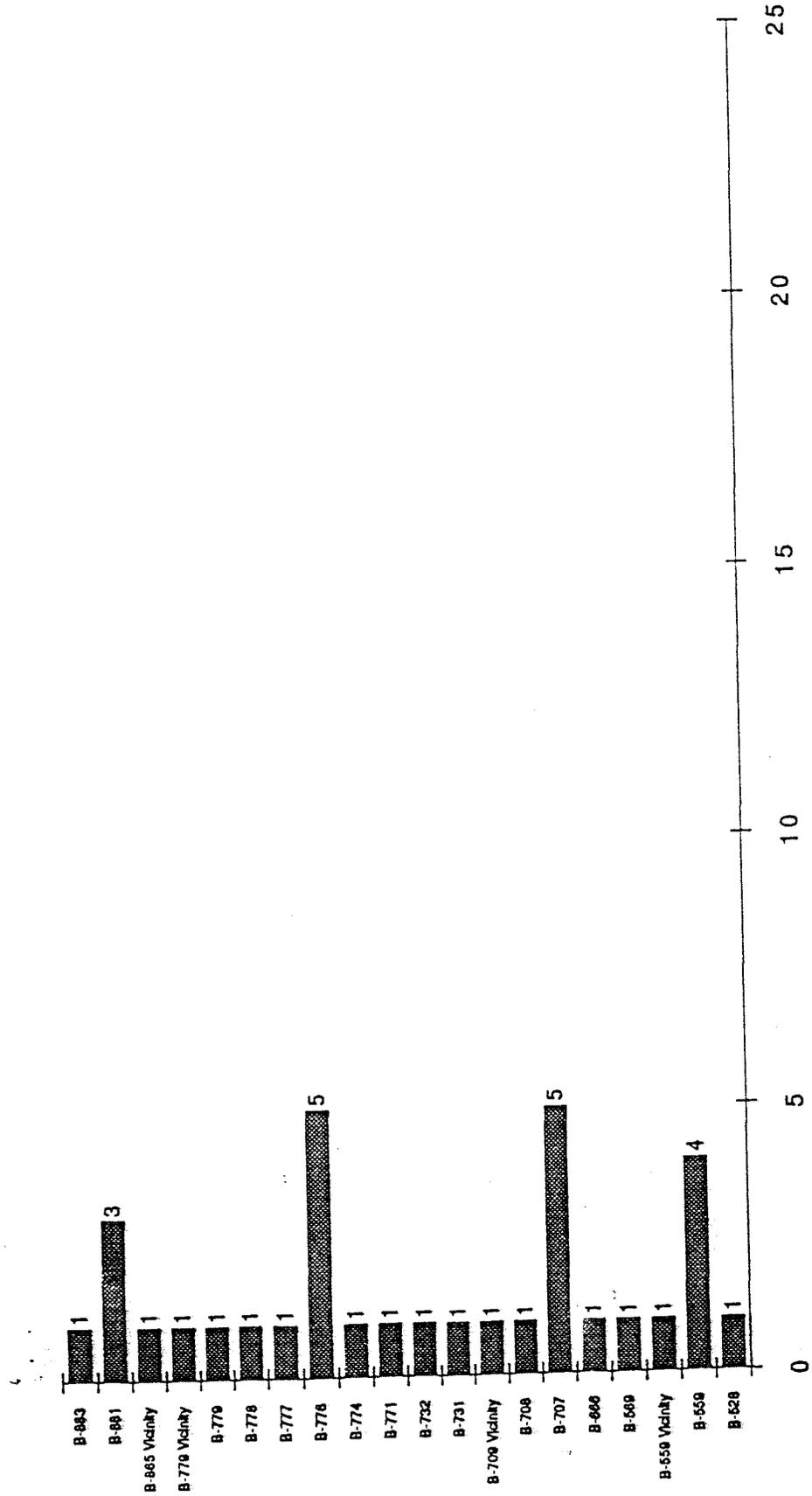
# RELEASE GRAPHICS

## RELEASES<sup>(1)</sup> OCCURRING OUTSIDE BUILDINGS OR CONTAINMENT ONLY

- (1) Includes all reported releases greater than or equal to one pound (or one pint of aqueous liquids) of hazardous substances (i.e., CERCLA hazardous substance, RCRA hazardous waste, SARA Title III extremely hazardous substance, DOT hazardous material, petroleum products, and nonhazardous substances (e.g., water) contaminated by hazardous constituents.

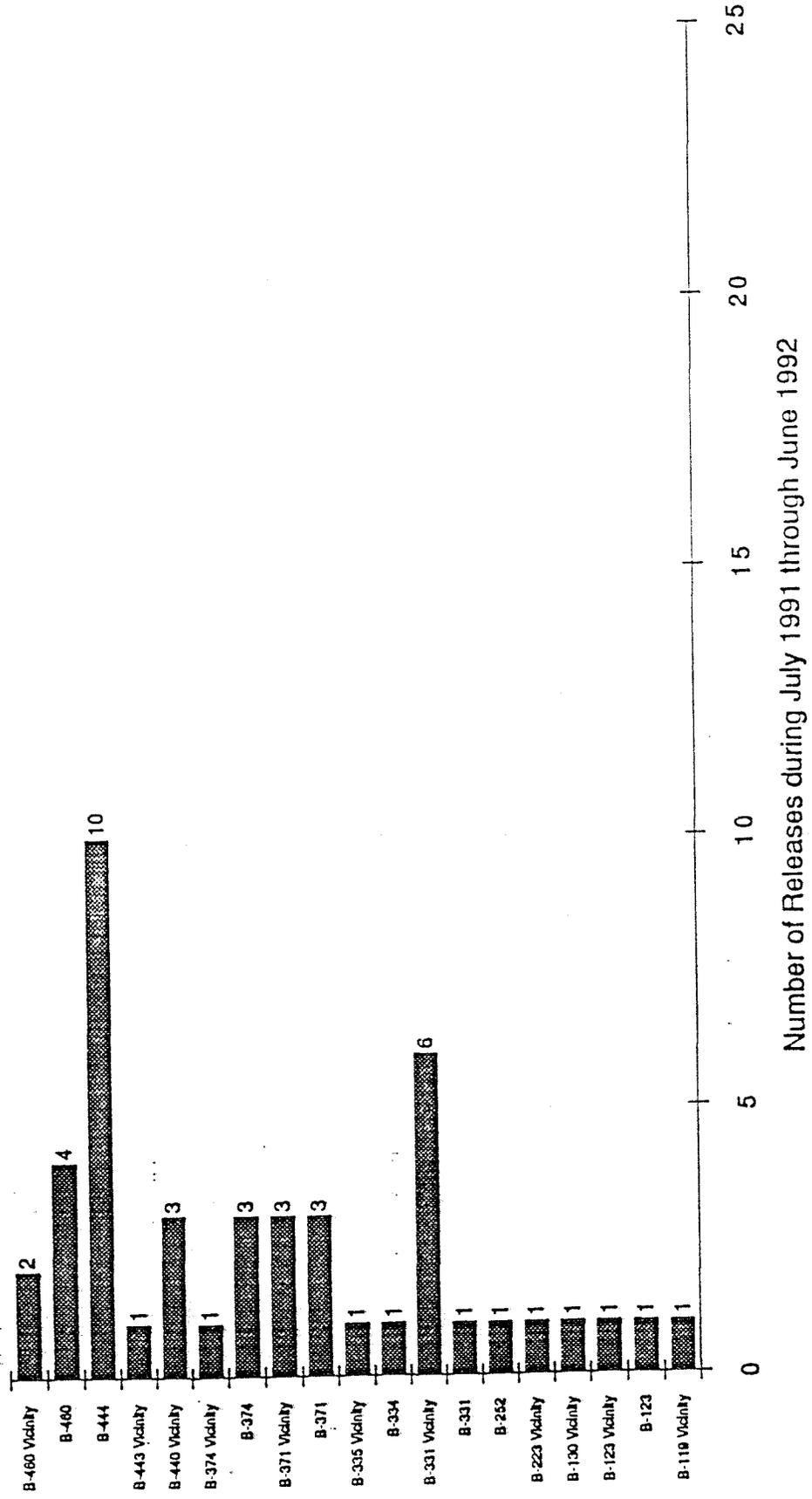
NOTE: All reported mercury releases are included in data base including releases less than one pound.

# Inside and Outside Releases by Location

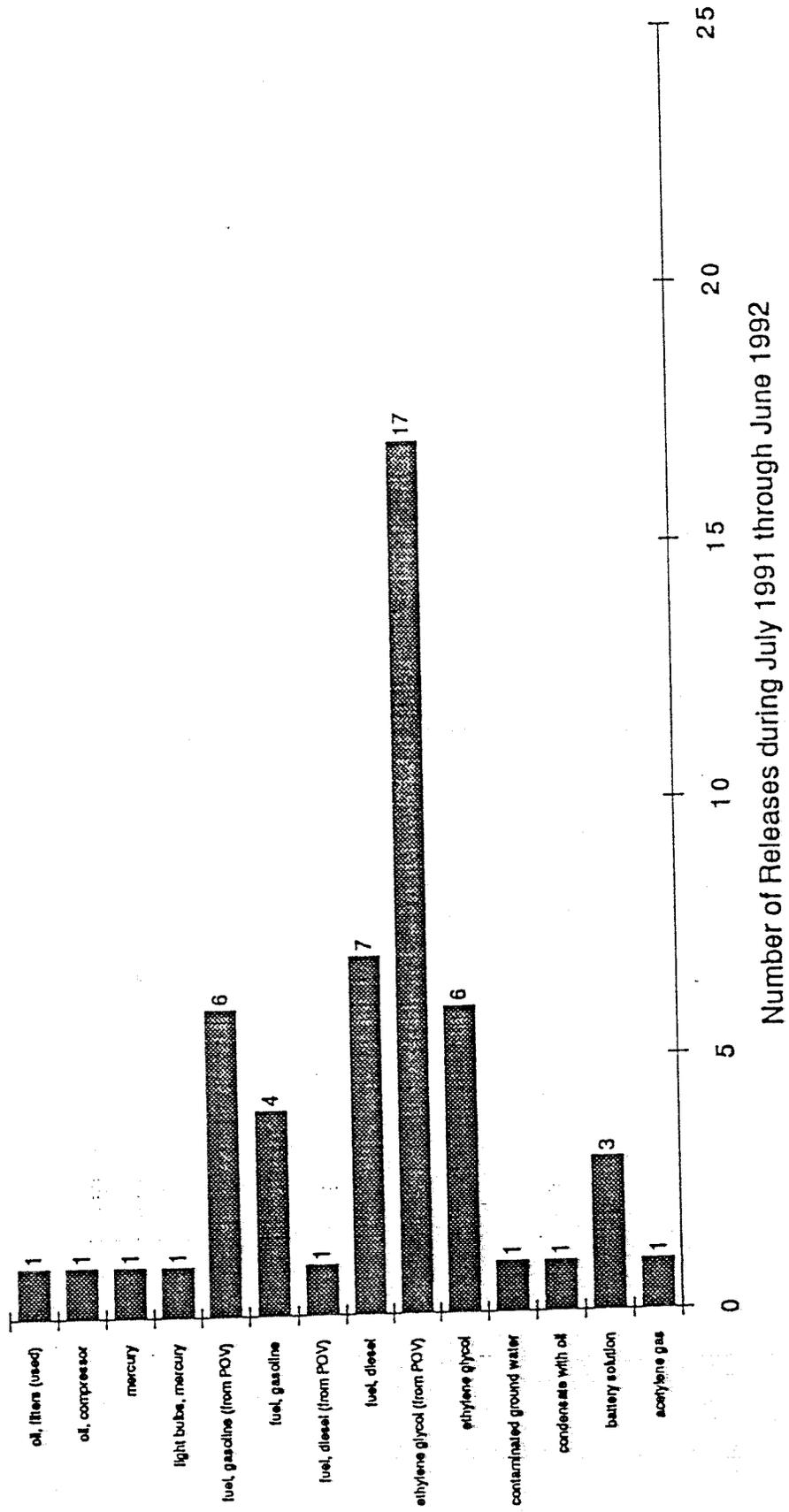


Number of Releases during July 1991 through June 1992

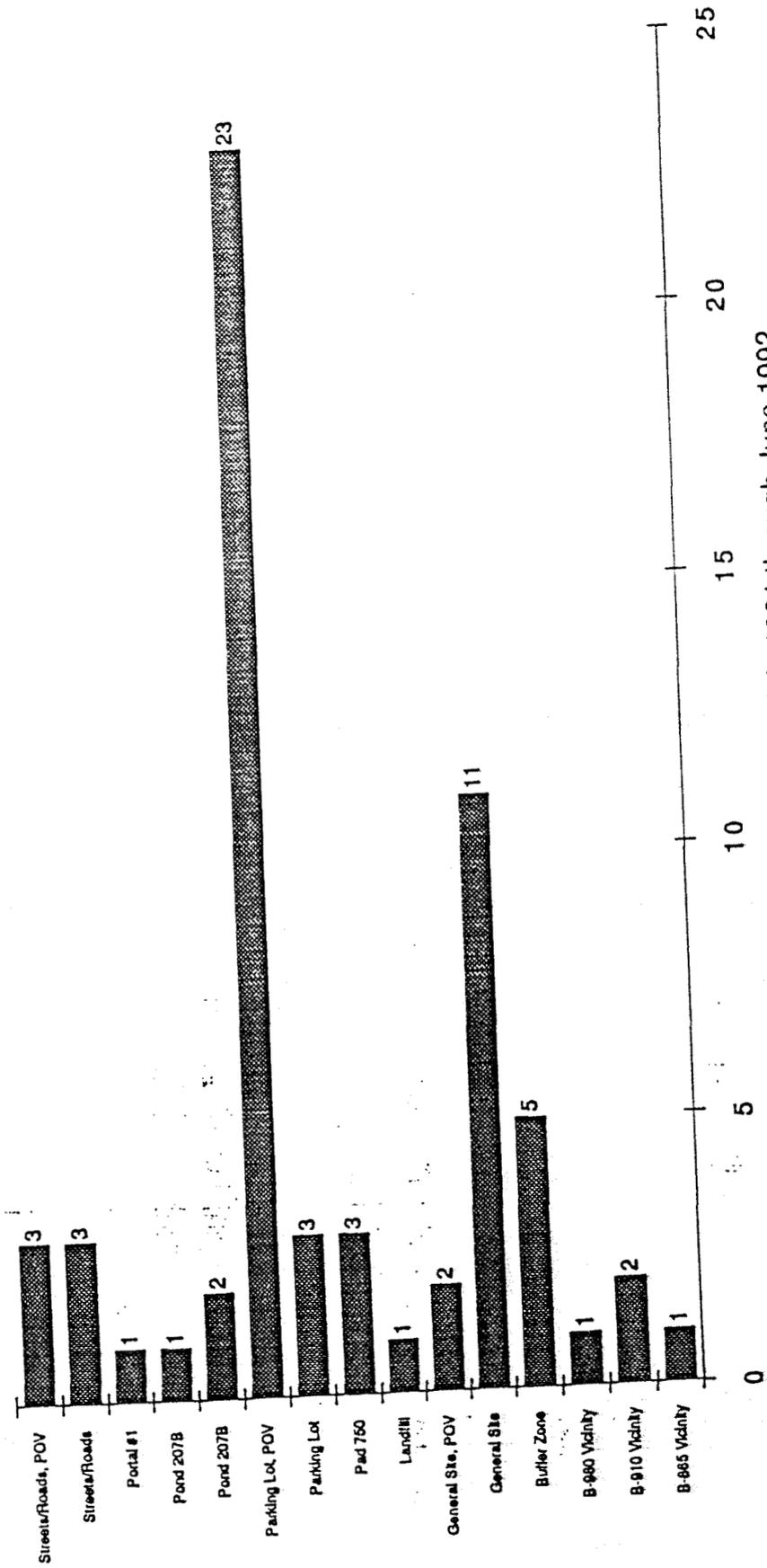
# Inside and Outside Releases by Location



# Outside Only Releases by Substance Type

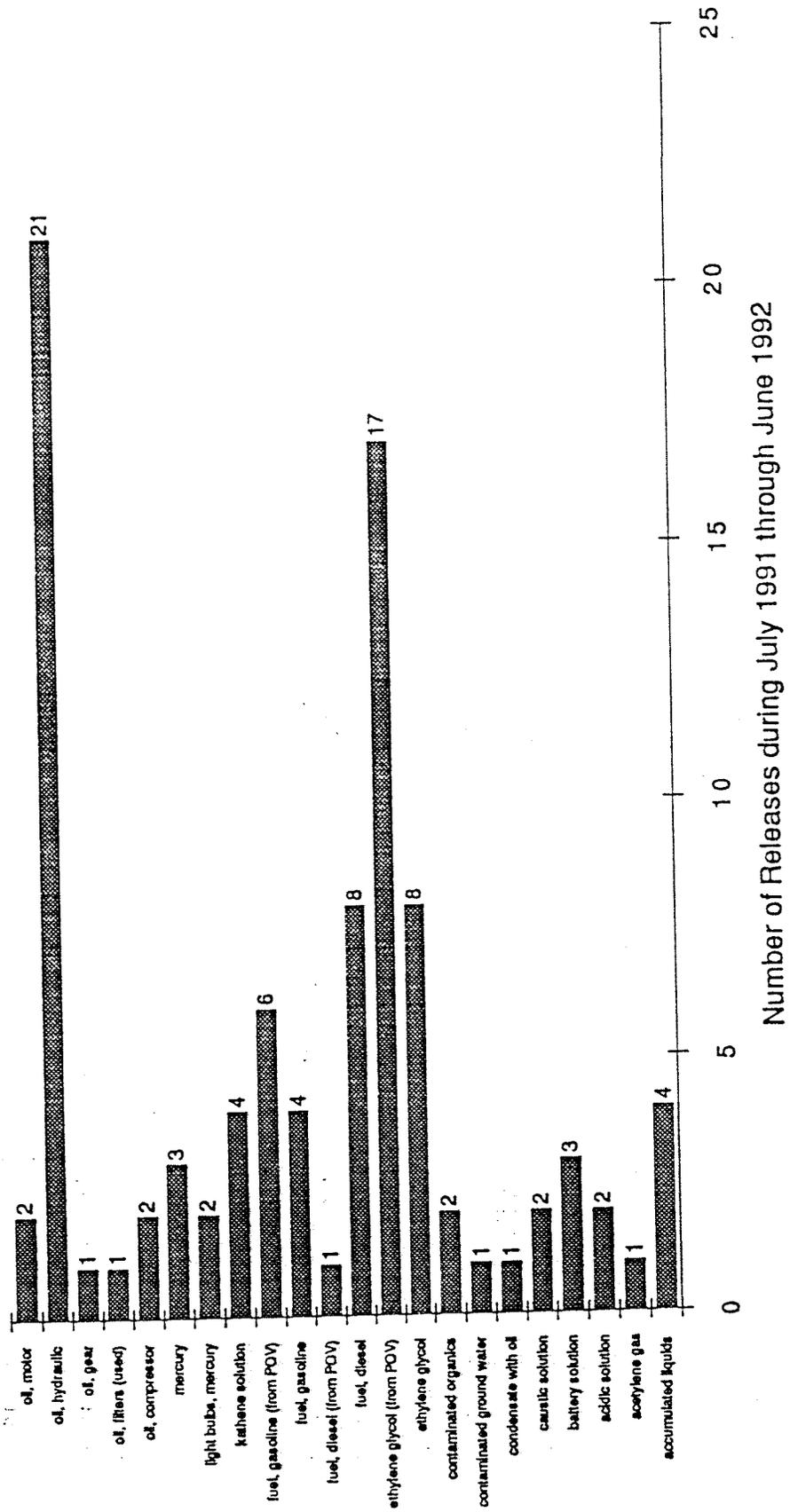


# Outside Only Releases by Location

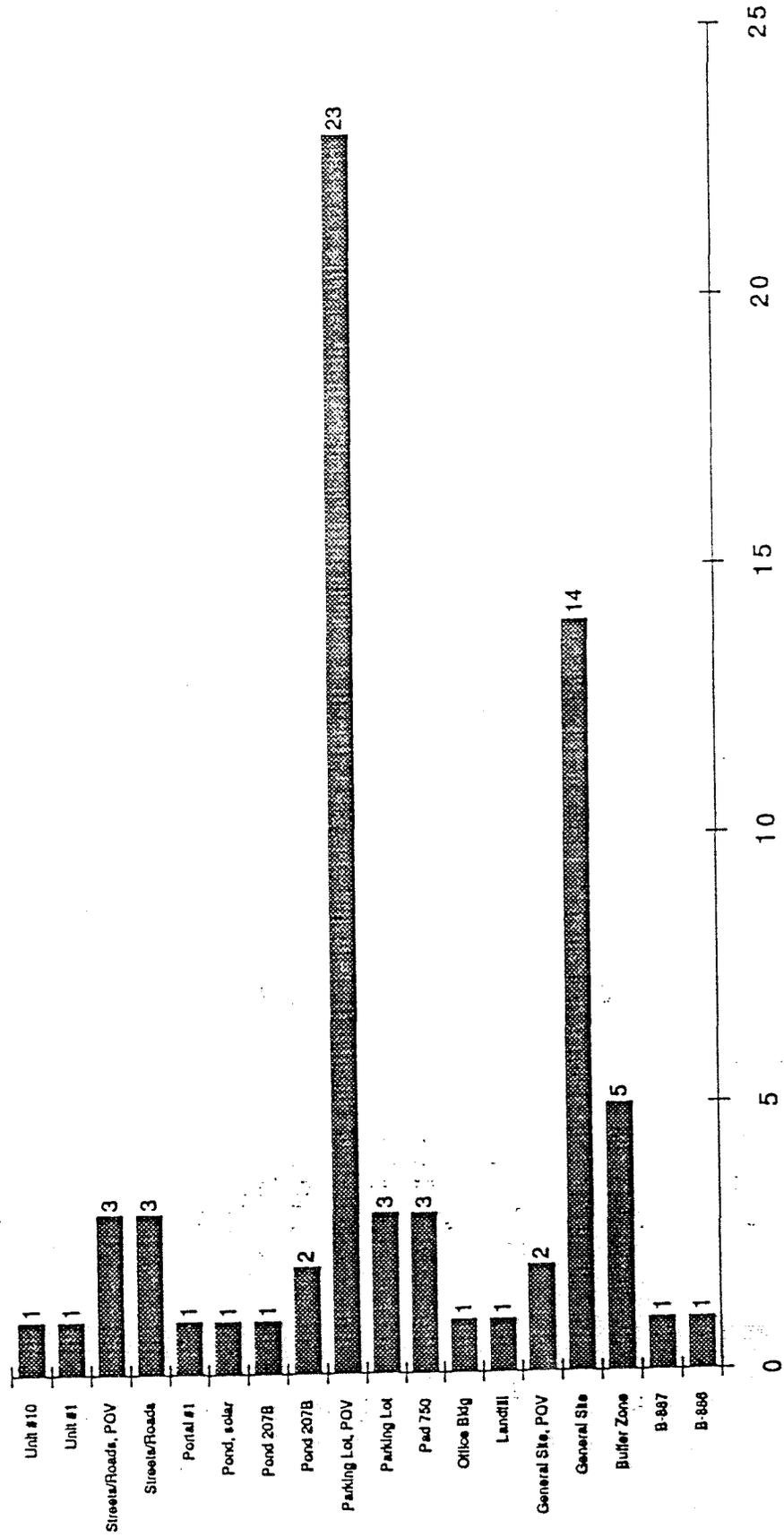


Number of Releases during July 1991 through June 1992

# Inside and Outside Releases by Substance Type

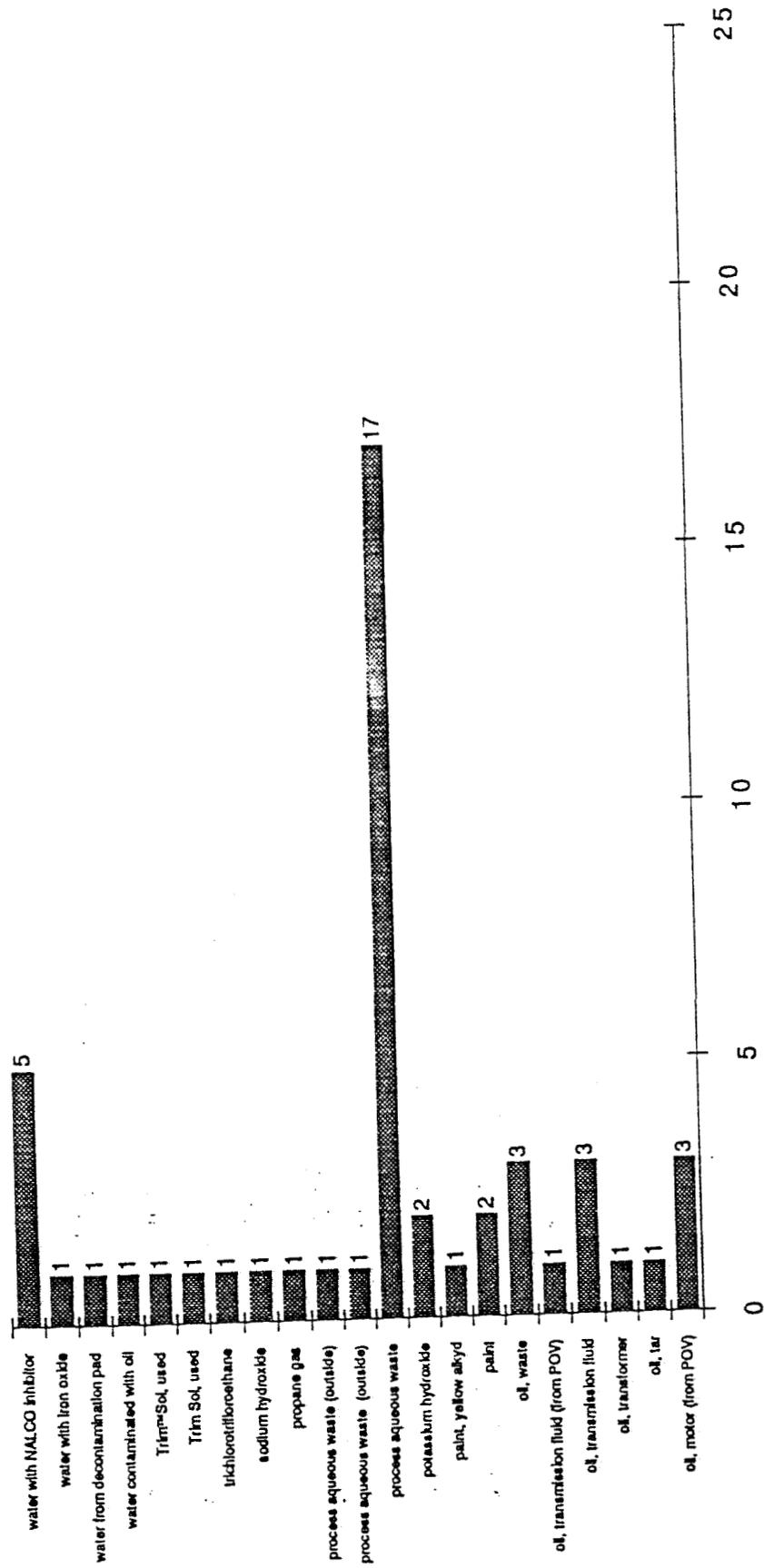


# Inside and Outside Releases by Location



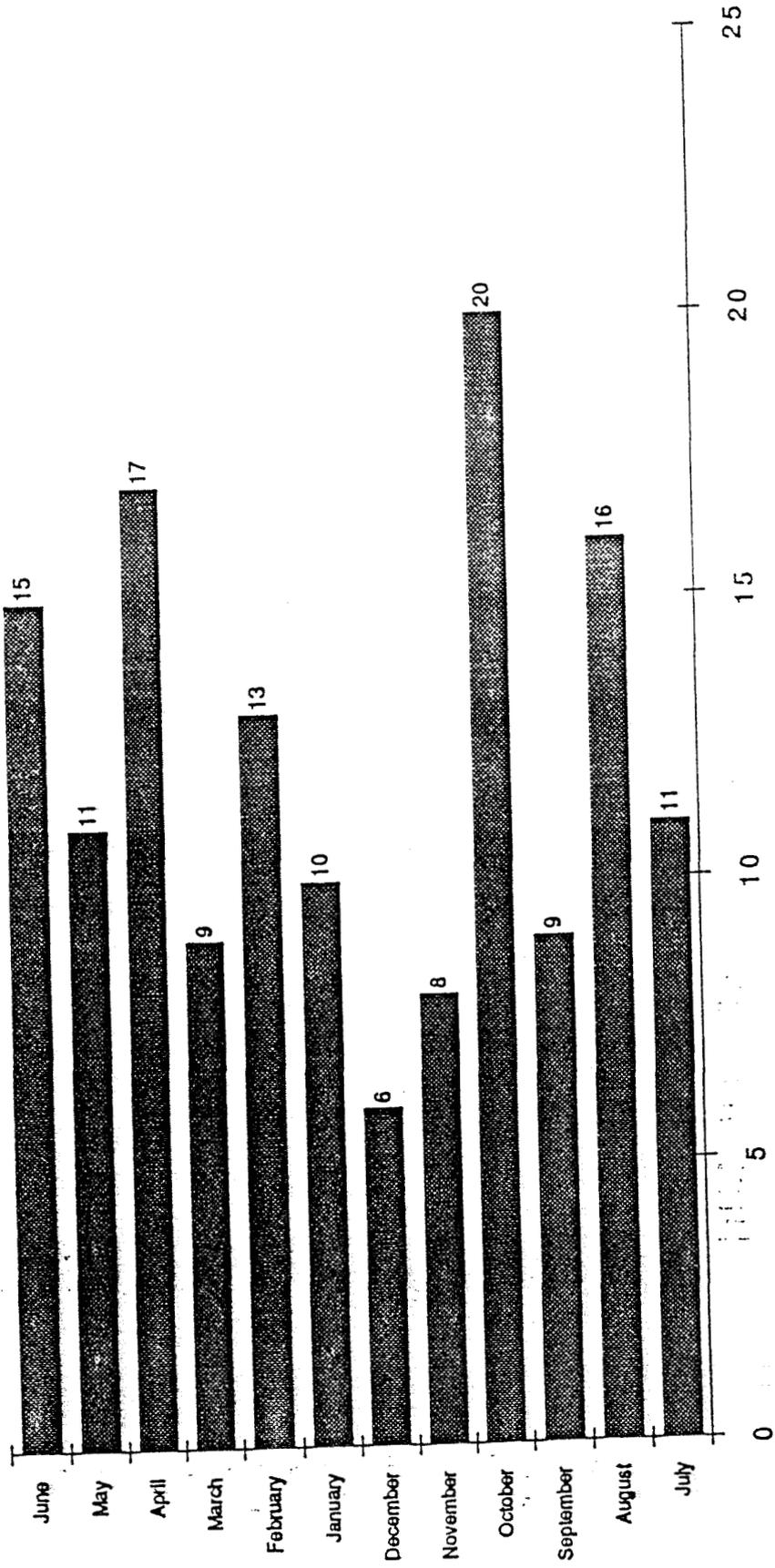
Number of Releases during July 1991 through June 1992

# Inside and Outside Releases by Substance Type



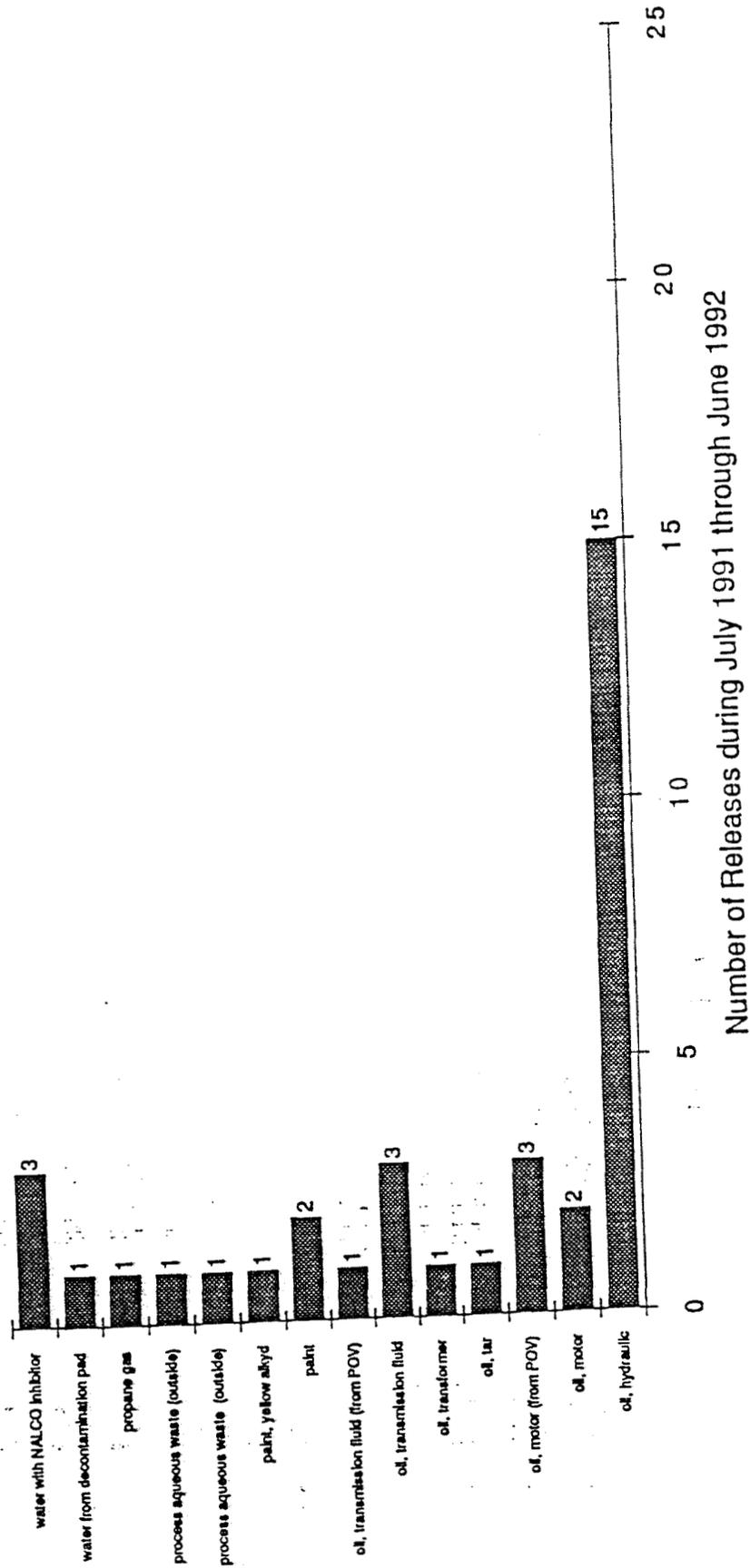
Number of Releases during July 1991 through June 1992

# Inside and Outside Releases by Month

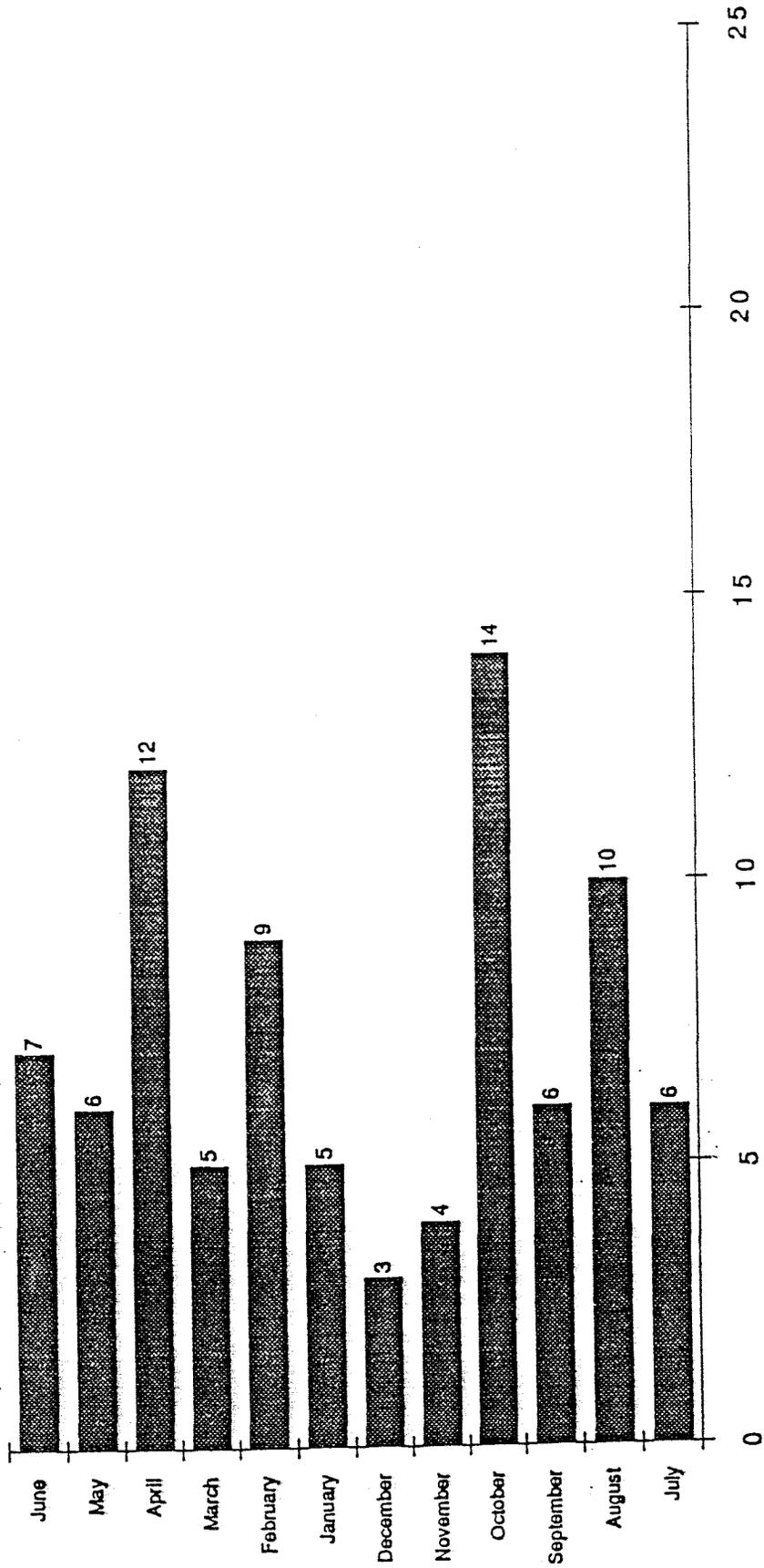


Number of Releases during July 1991 through June 1992

# Outside Only Releases by Substance Type



# Outside Only Releases by Month



Number of Releases during July 1991 through June 1992

# Outside Only Releases by Location

