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INITIAL _____ DATE 1/10

EG&G Idaho, Inc.

FORM EGG-2631#

(Rev. 01-92)

Project File Number	OU 4-12
EDF Serial Number	ER-WAG4-57
Functional File Number	N/A

ENGINEERING DESIGN FILE

Project/Task: OU 4-12 RI/FS

Subtask: Source Term Inventory

TITLE: CFA Landfills II and III; Disposal of Chemical Waste

SUMMARY

The summary briefly defines the problem or activity to be addressed in the EDF, gives a summary of the activities performed in addressing the problem and states the conclusions, recommendations, or results arrived at from this task.

Attachments 1 through 20 include the waste inventory information used in the OU 4-12 Remedial Investigation/Feasibility Study (EG&G Idaho, Inc.). Each of the following chemicals discussed was known or suspected to have been disposed to OU 4-12.

Attachment 1: Asbestos
Subject: Interoffice Correspondence EG&G Idaho, Inc., on notification of 65 cubic feet asbestos waste generated at TRA
Date: February 13, 1979
From: D. C. Hendrickson, EG&G Idaho, Inc., DCH-8-79
To: R. W. Passmore, EG&G Idaho, Inc.

Attachment 2: Asbestos
Subject: Interoffice Correspondence EG&G Idaho, Inc., on disposal of 65 cubic feet asbestos waste to CFA Landfill II
Date: February 14, 1979
From: R. W. Passmore, EG&G Idaho, Inc., PASS-16-79
To: D. P. Halls, EG&G Idaho, Inc.

Attachment 3: Asbestos
Subject: Form EG&G-2629 EG&G Idaho, Inc., giving approval of 65 cubic feet asbestos
Date: February 20, 1979
From: D. P. Halls, EG&G Idaho, Inc.
To: R. W. Passmore, EG&G Idaho, Inc.

Attachment 4: Asbestos
Subject: Letter, EG&G Idaho, Inc., on disposal of 75 cubic feet asbestos waste to CFA Landfill II.
Date: February 23, 1979
From: L. P. Duffy, EG&G Idaho, Inc., DUF-66-79
To: J. B. Whitsett, DOE-ID

Attachment 5: Asbestos
Subject: Interoffice Correspondence, EG&G Idaho, Inc., on management and disposal of asbestos waste in the INEL Sanitary Landfill. Attached is a letter form the Environmental Protection Agency dated March 29, 1985 that discusses notification requirements for removal of friable asbestos in renovation/demolition activities.
Date: February 4, 1986
From: J. Crone, EG&G Idaho, Inc., BILL-12-86
To: R. L. Billau, EG&G Idaho, Inc.

Attachment 6: Asbestos
Subject: Interoffice Correspondence EG&G Idaho, Inc.
Date: February 7, 1986
From: J. Crone, EG&G Idaho, Inc., Crone-11-86
To: R. L. Billau, EG&G Idaho, Inc.

Attachment 7: Chromate
Subject: Letter discussing replacement of chromate cooling systems at Test Reactor Areas ETR and ATR with phosphate cooling systems
Date: May 15, 1972
From: Aerojet Nuclear Company
To: E. K. Loop, U. S. Atomic Energy Commission

Attachment 8: Boron
Subject: Letter transmitting revision Sheet to "Proposed Program for Monitoring of the Regolith in the Vicinity of the LOFT Liquid Waste Disposal Pond". A telephone conversation memo dated May 22, 1972 on guidelines for disposal of boron solutions from the LOFT project to a disposal pond.
Date: June 3, 1972
From: H. L. Coplen, Manager LOFT Project Division, Aerojet Nuclear Company, HLC-532-72
To: R. E. Swanson, Director of LOFT Project Division, U. S. Atomic Energy Commission

Attachment 9: Chromate and Boron
Subject: Interoffice Correspondence evaluation of the necessity of removal of chemically contaminated soil
Date: October 30, 1975
From: D. H. Null, Aerojet Nuclear Company, DHN-101-75
To: S. B. Letson, Aerojet Nuclear Company

Attachment 10: Chromate
Subject: Notegram (Form EG&G-460) giving concurrence on disposal and handling procedure for chromate contaminated wood to CFA Landfill II
Date: March 21, 1980
From: H. M. Batchelder, EG&G Idaho, Inc.
To: R. V. Dye, EG&G Idaho, Inc.

Attachment 11: Chromate
Subject: Letter requesting information and comment on disposal of waste pipe contaminated with potassium chromate to the CFA sanitary (CFA Landfill II)
Date: April 5, 1979
From: L. P. Duffy, Manager Waste Management Program, DUF-89-79
To: J. B. Whitsett, DOE-ID

Attachment 12: Chromate
Subject: Interoffice Correspondence transmitting a section of the disposal procedure for chromate contaminated waste to the CFA sanitary (CFA Landfill II)
Date: October 19, 1979
From: J. McNeel, Morrison-Knudsen Company, Inc.
To: Distribution, Morrison-Knudsen Company, Inc.

Attachment 13: Chromate, Boron, and Morpholine
Subject: Memo on information related to chromate and boron solutions and morpholine use and disposal at NRF
Date: April 1, 1993
From: S. H. McCormick, EG&G Idaho, Inc.
To: G. J. Stormberg, EG&G Idaho, Inc.

Attachment 14: Chromate and Boron
Subject: Memo of Conversation (Form EG&G-561) on disposal practices from Naval Reactors Facility to CFA Landfills
Date: March 30, 1993
Interviewer: Steven H. McCormick, EG&G Idaho, Inc.
Interviewee: Dolf Sierre, Westinghouse Electric Corporation

Attachment 15: Boron and Chromate Solutions, Morpholine, and Paint
Subject: Memo of Conversation (Form EG&G-561) on disposal practices at NRF to CFA Landfills
Date: April 14, 1993
Interviewer: Steven H. McCormick, EG&G Idaho, Inc.
Interviewee: Mark Hutchinson, Westinghouse Electric Corporation

Attachment 16: Ordnance
Subject: Interoffice Correspondence on removal of buried ordnance in CFA Landfill II
Date: August 25, 1978
From: R. W. Passmore, EG&G Idaho, Inc., PASS-69-78
To: L. P. Duffy, EG&G Idaho, Inc.

EG&G Idaho, Inc.

FORM EGG-2631#

(Rev. 01-92)

Attachment 17: Resin
Subject: Memo of Conversation on disposal of resin from the Test Reactor Area demineralizer plant to CFA, Landfill II
Date: April 22, 1993
Interviewer: Steven H. McCormick, EG&G Idaho, Inc.
Interviewee: Del VanOrden, EG&G Idaho, Inc.

Distribution (complete package):

Distribution (summary page only):

Author	Dept.	Reviewed	Date	Approved	Date
Steven H. McCormick	E.R. WAG 4			[illegible]	9/26/94
		EG&G Review	Date	EG&G Approval	Date
		V. W. Watson	9/23/94		

Attachment 1

Asbestos

Subject: Interoffice Correspondence EG&G Idaho, Inc., on notification of 65 cubic feet asbestos waste generated at TRA.

Date: February 13, 1979

From: D. C. Hendrickson, EG&G Idaho, Inc., DCH-8-79

To: R. W. Passmore, EG&G Idaho, Inc.

EG&G Idaho

RECEIVED
Waste Reduction & Reports Branch
R. W. [illegible]
FEB 13 1979

INTEROFFICE CC....

date February 13, 1979

to ~~R. W. Passmore~~

from D. C. Hendrickson DCHendrickson

subject ASBESTOS WASTE FOR DISPOSAL - DCH-8-79

We are planning to generate some waste asbestos type insulating material in the next week. The waste will be approximately 65 cubic feet of assorted new materials which have been stored here at TRA and 6 to 10 cubic feet of used material to be removed from existing piping as part of an ongoing construction project. These wastes will be handled in accordance with the procedure contained in the EG&G Safety Division's Job Safety Analysis #45, "Removal of Asbestos Insulation from Vessels and Piping." It will be bagged, sealed, marked and shipped to the Sanitary Landfill for disposal. Your approval to ship these wastes is hereby requested. Please advise me at Ext. 6-4419 of any special handling procedures or instructions you will require for shipment.

vb

cc: W. P. Barnes
J. C. Commander
L. J. Tommer
J. H. Southwick
Project File
Central File
D. C. Hendrickson File

COULD TRY TO CONFIRM THAT PROCEDURE WAS FOLLOWED AND INSULATION WAS BAGGED & NOT LOOSE IN THE LANDFILL.

FORM EG&G-954
(Rev 2-77)

Attachment 2

Asbestos

Subject: Interoffice Correspondence EG&G Idaho, Inc. on disposal of 65 cubic feet asbestos waste to CFA Landfill II.

Date: February 14, 1979

From: R. W. Passmore, EG&G Idaho, Inc., PASS-16-79

To: D. P. Halls, EG&G Idaho, Inc.

EG&G Idaho

INTEROFFICE CORRESPONDENCE

date February 14, 1979

to D. P. Halls

from R. W. Passmore R. W. Passmore

subject ASBESTOS WASTE FOR DISPOSAL - Pass-16-79

Ref: D. C. Hendrickson ltr to R. W. Passmore, Same Subject, DCH-8-79, dated 2-13-79

The reference letter (attached) requested disposal instructions for asbestos waste. D. C. Hendrickson informed me by telecon that the asbestos is not radioactively contaminated and that it will be double bagged and sealed for disposal.

I suggest that the asbestos waste be disposed of at the CFA landfill by placing it in a hole dug in front of the working face. The hole should be immediately filled after the asbestos is placed in it. The location of the disposal should be logged by Engineering for entry on the landfill maps.

Please advise if you concur with the proposed method of disposal or what other precautions or methods should be employed. The work which will generate this waste is scheduled for the week of February 19, 1979; hence, an expeditious response will be appreciated.

The Work Release charge number for your review is G35120000.

rw

cc: L. P. Duffy
R. V. Dye
D. C. Hendrickson
J. H. Southwick
R. L. Silverthorne
Central File
R. W. Passmore File

FORM EG&G-954
(Rev. 2-77)

Attachment 3

Asbestos

Subject: Form EG&G-2629 EG&G Idaho, Inc. giving approval of 65 cubic feet asbestos.

Date: February 20, 1979

From: D. P. Halls, EG&G Idaho, Inc.

To: R. W. Passmore, EG&G Idaho, Inc.

FORM EG&G-2629 (Rev 6-77)

TO: ✓R. W. Passmore (WMO 601) (Name) FROM: D. P. Halls (Rog.345) (Name)

(Activity) (Activity)

Document: Asbestos Waste for Disposal Date: 2-20-79

The above document is forwarded herewith for your information and review. Please note any comments you have in the space below and return to the originator as soon as practical and in no case later than _____ (Date) Questions should be directed to the originator.

Comment DPH-62=79

Resolution

RECEIVED
Waste Reduction & Disposal
R. W. P.
FEB 21 1979
Action

Ref 1: D. C. Hendrickson ltr to R. W. Passmore, DCH-8-79, Same Subject, 2-13-79.

Ref 2: R. W. Passmore ltr to D. P. Halls, Pass-16-79, Same Subject, 2-14-79.

The Safety Division has reviewed the request in Reference 1 and we concur that the proposal with the necessary precautions itemized in Reference 1 and 2, is adequate.

This review was performed in accordance with the requirements of SM Section 2020.

cc: J. L. Clark
J. R. Fielding (r) R. B. O'Brien
W. G. Hathaway
D. W. Marshall
N. G. Reece
T. H. Sanford
R. L. Silverthorne (r) L. C. Van Deusen
J. F. Sommers
File 9-5R

Per telecon D. P. Halls he obtained ID safety approval for the asbestos disposal. R. W. Passmore 2/21/79

Reviewed By: _____

COMMENT ENDORSEMENT:

Signed Dee P. Halls
Review Group Supervisor

Date 2-21-79

RESOLUTION ENDORSEMENT:

Signed _____
Originating Group Supervisor

Date _____

WHITE-ORIGINATOR COPY. YELLOW-RETURN TO REVIEW GROUP AFTER RESOLUTION: PINK-REVIEW GROUP RETAIN THIS COPY

Page ____ of ____

Attachment 4

Asbestos

Subject:	Letter, EG&G Idaho, Inc. on disposal of 75 cubic feet asbestos waste to CFA Landfill II.
Date:	February 23, 1979
From:	L. P. Duffy, EG&G Idaho, Inc. DUF-66-79
To:	J. B. Whitsett, DOE-ID

EG&G Idaho, Inc.

P. O. Box 1625
Idaho Falls, Idaho 83401

Mar-1

February 23, 1979

File
2.3

Mr. J. B. Whitsett, Chief
Radioactive Waste Programs Branch
Idaho Operations Office - DOE
Idaho Falls, ID 83401

ASBESTOS WASTE FOR DISPOSAL - Duf-66-79

Ref: (a) D. C. Hendrickson ltr to R. W. Passmore, DCH-8-79, Same Subject, Feb 13, 1979
(b) R. W. Passmore ltr to D. P. Halls, Pass-16-79, Same Subject, Feb 14, 1979
(c) D. P. Halls Document Review Form to R. W. Passmore, DPH-62-79, Same Subject, Feb 20, 1979

Dear Mr. Whitsett:

This letter is to advise you that 75 cubic feet of asbestos waste will be disposed of at the Central Facilities Area (CFA) landfill. This disposal has the concurrence of EG&G Safety, Waste Management and ID-Safety (reference (c)) and is to be conducted in accordance with precautions noted in references (a) and (b).

Very truly yours,

L. P. Duffy, Manager
Waste Management Programs

RWP:gbc

Attachments:
Reference Documents

cc: M. W. Littleton, DOE-ID
R. W. Kiehn, EG&G Idaho

Attachment 5

Asbestos

Subject: Interoffice Correspondence, EG&G Idaho, Inc. on management and disposal of asbestos waste in the INEL Sanitary Landfill. Attached is a letter from the Environmental Protection Agency dated March 29, 1985 that discusses notification requirements for removal of friable asbestos in renovation/demolition activities.

Date: February 4, 1986

From: J. Crone, EG&G Idaho, Inc., BILL-12-86

To: R. L. Billau, EG&G Idaho, Inc.

EG&G Idaho

INTEROFFICE CORRESPONDENCE

Date: February 4, 1986

To: J. Crone

From: R. L. Billau RLB

Subject: OPERATION OF THE LANDFILL FOR THE DISPOSAL OF ASBESTOS - Bill-12-86

We are currently preparing to notify the EPA through DOE-ID of our on-site operations involving asbestos removal. As part of the notification requirements, we have to certify that the landfill we are using to dispose of the asbestos meets the current applicable EPA regulations.

Please review the attached regulations and provide this office with written verification of disposal methods relative to the requirements by February 12. Attachment 1 is a copy of the regulations. Attachment 2 is a copy of the notification requirements of which #8 is applicable to you.

Please call 6-2360 if we can assist you in the interpretation and application of these requirements.

fg

Attachments:
As Stated

cc: J. L. Clark
J. M. Gural
J. H. Nelson
Central File
File 4.5; 4.7
R. L. Billau File

U.S. ENVIRONMENTAL PROTECTION AGENCY

REGION X

IDAHO OPERATIONS OFFICE
422 W. WASHINGTON ST.
BOISE, IDAHO 83702

REPLY TO
ATTN OF:
IOO

March 29, 1985

MEMORANDUM:

SUBJECT: Notification Requirements for Removal of Friable Asbestos Material in Renovation/Demolition Activities

FROM: Environmental Protection Agency
422 W. Washington
Boise, Idaho 83702

TO: All contractors and building owners/operators who are or will be involved in the removal of friable asbestos material in renovation/demolition activities

Written notification of friable asbestos removal is required by Federal law under the National Emissions Standards for Hazardous Air Pollutants (NESHAPS). The removal of friable asbestos material in renovation/demolition work has been federally regulated as a result of a growing concern and awareness of the health hazards related to exposure to asbestos fibers.

For any renovation or demolition activity involving asbestos removal, written notification must be postmarked to the EPA office prior to the start of the operation. The purpose of this letter is to inform you of the notification deadlines, and the information which the notification must contain.

Notification Deadlines

- Renovations: (i.e. one or more facility components will be altered in any way).

For any renovation operation in which at least 80 linear meters (260 linear feet) such as on pipes, or 15 square meters (160 square feet), such as on ceiling tiles or boilers, of friable asbestos material will be removed:

Written notification must be postmarked as early as possible before the operation begins.

- Demolitions: (i.e. wrecking or removal of any load-supporting structural member of a facility, together with any related facility).

For any demolition in which at least 80 linear meters or 15 square meters of friable asbestos material will be removed:

Written notification must be postmarked at least 10 days before the operation begins .

For any demolition in which less than 80 linear meters or 15 square meters of friable asbestos material will be removed:

Written notification must be postmarked at least 20 days before the operation begins.

Notification Contents

For both renovations and demolitions involving the removal of at least 80 linear feet or 15 square meters of friable asbestos material, the following information must be included in the notification:

1. Name and address of facility owner.

2. Description of the facility being renovated or demolished, including the size, age, and prior (or present) use of the building.

3. Estimate of the approximate amount of friable asbestos material present in the facility. Include an estimation of the thickness of friable asbestos material on facility components or load supporting structural members.

4. Location of the facility being renovated or demolished.

5. Scheduled starting and completion dates of the renovation or demolition.

6. Type of renovation/demolition that is taking place (i.e. removal of pipes, boilers, ceiling tiles, etc., stripping off pipe insulation, removal of structural components, etc.).

7. Methods to be used to remove and dispose of the asbestos material in order to meet the requirements in the Federal Regulations. Please be specific.

8. Name and location of the waste disposal site where the friable asbestos waste material will be deposited, and written verification of disposal and disposal mothods, and of warnings posted from the site operator following the removal.

For any demolition in which less than 80 linear meters, or 15 square meters of asbestos material will be removed, only numbers 1 through 5 above need be included on the notification.

Office of Management and Budget approves them.

§ 61.124 Test methods and procedures.

(a) Each owner or operator of a source required to test emissions under § 61.213, unless an equivalent or alternate method has been approved by the Administrator, shall use the following test methods:

(1) Test Method 1 of Appendix A to Part 60 shall be used to determine sample and velocity traverses;

(2) Test Method 2 of Appendix A to Part 60 shall be used to determine velocity and volumetric flow rate;

(3) Test Method 3 of Appendix A to Part 60 shall be used for gas analysis.

(4) Test Method 5 of Appendix A to Part 60 shall be used to collect particulate matter containing the polonium-210; and

(5) Test Method 111 of Appendix B to this part shall be used to determine the polonium-210 emissions.

§ 61.125 Monitoring of operations.

(a) The owner or operator of any source subject to this subpart using a wet-scrubbing emission control device shall install, calibrate, maintain, and operate a monitoring device for the continuous measurement of the pressure loss of the gas stream through the scrubber. The monitoring device must be certified by the manufacturer to be accurate with ±250 pascals (±1 inch of water). Records of these measurements shall be maintained at the source and made available for inspection by the Administrator for a minimum of 2 years.

(b) The owner or operator of any source subject to this subpart using an electrostatic precipitator control device shall install, calibrate, maintain, and operate a monitoring device for the continuous measurement of the primary and secondary current and the voltage in each electric field. Baseline operating values for these parameters shall be maintained with ±30 percent of their baseline operating values.

(c) For the purpose of conducting an emission test under Section 61.123, the owner or operator of any source subject to the provisions of this subpart shall install, calibrate, maintain, and operate a device for measuring the phosphate rock feed to any affected calciner or nodulizing kiln. The measuring device used must be accurate to within ±5 percent of the mass rate over its operating range.

§ 61.126 Waiver of compliance.

(a) To request a waiver, applicants shall follow the requirements of § 61.10(b)–(d).

(b) The following provisions also apply:

(1) The owner or operator of any existing source, or any new source to which a standard prescribed under this part is applicable which had an initial startup which preceded the effective date of a standard prescribed under this part shall, within 90 days after the effective date, provide the following information in writing to the Administrator:

(i) Name and address of the owner or operator.

(ii) The location of the source.

(iii) The annual quantity of polonium-210 emitted (in Ci/y for the most recent calendar year).

(iv) A brief description of the nature, size, design, and method of operation of the stationary source including the operating design capacity of such source. Identify each point of emission for each hazardous pollutant.

(v) The average amount of polonium-210 being processed by the source over the last 12 months preceding the date of the report.

(vi) A description of the existing control equipment for each emission point.

(A) Primary control device(s) for radionuclide emissions.

(B) Secondary control device(s) for radionuclide emissions.

(C) Estimated control efficiency (percent) for each control device.

(vii) A statement by the owner or operator of the source as to whether he can comply with the standards prescribed in this part within 90 days of the effective date.

Subpart M—National Emission Standard for Asbestos

[Subpart M added by 49 FR 13661, April 5, 1984]

§ 61.140 Applicability.

The provisions of this subpart are applicable to those sources specified in §§ 61.142 through 61.153.

see last page

§ 61.141 Definitions.

All terms that are used in this subpart and are not defined below are given the same meaning as in the and in Subpart A of this part.

Active waste disposal site means any disposal site other than an inactive site.

Adequately wetted means sufficiently mixed or coated with water or an aqueous solution to prevent dust emissions.

Asbestos means the asbestiform varieties of serpentinite (chrysotile), riebeckite (crocidolite), cummingtonite-grunerite, anthophyllite, and actinolite-tremolite.

Asbestos-containing waste materials means any waste that contains commercial asbestos and is generated by a source subject to the provisions of this subpart. This term includes asbestos mill tailings, asbestos waste from control devices, friable asbestos waste material, and bags or containers that previously contained commercial asbestos. However, as applied to demolition and renovation operations, this term includes only friable asbestos waste and asbestos waste from control devices.

Asbestos material means asbestos or any material containing asbestos.

Asbestos mill means any facility engaged in converting, or in any intermediate step in converting, asbestos ore into commercial asbestos. Out storage of asbestos material is not sidered a part of the asbestos mill.

Asbestos tailings means any solid waste that contains asbestos and is a product of asbestos mining or milling operations.

Asbestos waste from control devices means any waste material that contains asbestos and is collected by a pollution control device.

[Corrected by 49 FR 25453, June 21, 1984]

Commercial asbestos means any asbestos that is extracted from asbestos ore.

Demolition means the wrecking or taking out of any load-supporting structural member of a facility together with any related handling operations.

Emergency renovation operation means a renovation operation that was not planned but results from a sudden, unexpected event. This term includes operations necessitated by nonroutine

failures of equipment.

[Corrected by 49 FR 25453, June 21, 1984]

Fabricating means any processing of a manufactured product that contains commercial asbestos, with the exception of processing at temporary sites for the construction or restoration of facilities.

Facility means any institutional, commercial, or industrial structure, installation, or building (excluding apartment buildings having no more than four dwelling units).

Facility component means any pipe, duct, boiler, tank, reactor, turbine, or furnace at or in a facility; or any structural member of a facility.

Friable asbestos material means any material containing more than 1 percent asbestos by weight that hand pressure can crumble, pulverize, or reduce to powder when dry.

Inactive waste disposal site means any disposal site or portion of it where additional asbestos-containing waste material will not be deposited and where the surface is not disturbed by vehicular traffic.

Manufacturing means the combining of commercial asbestos—or, in the case of woven friction products, the combining of textiles containing commercial asbestos—with any other material(s), including commercial asbestos, and the processing of this combination into a product.

Outside air means the air outside buildings and structures.

Particulate asbestos material means finely divided particles of asbestos material.

Planned renovation operations means a renovation operation, or a number of such operations, in which the amount of friable asbestos material that will be removed or stripped within a given period of time can be predicted. Individual nonscheduled operations are included if a number of such operations can be predicted to occur during a given period of time based on operating experience.

Remove means to take out friable asbestos materials from any facility.

Renovation means altering in any way one or more facility components. Operations in which load-supporting structural members are wrecked or taken out are excluded.

Roadways means surfaces on which motor vehicles travel. This term includes highways, roads, streets, parking areas, and driveways.

Strip means to take off friable asbestos materials from any part of a facility.

[Corrected by 49 FR 25453, June 21, 1984]

Structural member means any load-supporting member of a facility, such as beams and load supporting walls; or any nonload-supporting member, such as ceilings and nonload-supporting walls.

[Corrected by 49 FR 25453, June 21, 1984]

Visible emissions means any emissions containing particulate asbestos material that are visually detectable without the aid of instruments. This does not include condensed uncombined water vapor.

§ 61.142 Standard for asbestos mills.

Each owner or operator of an asbestos mill shall either discharge no visible emissions to the outside air from that asbestos mill or use the methods specified by § 61.154 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air.

§ 61.143 Standard for roadways.

No person may surface a roadway with asbestos tailings or asbestos-containing waste material on that roadway, unless it is a temporary roadway on an area of asbestos ore deposits.

[61.143 corrected by 49 FR 25453, June 21, 1984]

§ 61.144 Standard for manufacturing.

(a) *Applicability.* This section applies to the following manufacturing operations using commercial asbestos.

(1) The manufacture of cloth, cord, wicks, tubing, tape, twine, rope, thread, yarn, roving, lap, or other textile materials.

(2) The manufacture of cement products.

(3) The manufacture of fireproofing and insulating materials.

(4) The manufacture of friction products.

(5) The manufacture of paper, millboard, and felt.

(6) The manufacture of floor tile.

(7) The manufacture of paints, coatings, caulks, adhesives, and sealants.

(8) The manufacture of plastics and rubber materials.

(9) The manufacture of chlorine.

(10) The manufacture of shotgun shell wads.

(11) The manufacture of asphalt concrete.

(b) *Standard.* Each owner or operator of any of the manufacturing operations to which this section applies shall either:

(1) Discharge no visible emissions to the outside air from these operations or from any building or structure in which they are conducted; or

(2) Use the methods specified by § 61.154 to clean emissions from these operations containing particulate asbestos material before they escape to, or are vented to, the outside air.

§ 61.145 Standard for demolition and renovation: Applicability.

The requirements of §§ 61.146 and 61.147 apply to each owner or operator of a demolition or renovation operation as follows:

(a) If the amount of friable asbestos materials in a facility being demolished is at least 80 linear meters (260 linear feet) on pipes or at least 15 square meters (160 square feet) on other facility components, all the requirements of §§ 61.146 and 61.147 apply, except as provided in paragraph (c) of this section.

(b) If the amount of friable asbestos materials in a facility being demolished is less than 80 linear meters (260 linear feet) on pipes and less than 15 square meters (160 square feet) on other facility components, only the requirements of paragraphs (a), (b), and (c) (1), (2), (3), (4), and (5) of § 61.146 apply.

[61.145(b) corrected by 49 FR 25453, June 21, 1984]

(c) If the facility is being demolished under an order of a State or local governmental agency, issued because the facility is structurally unsound and in danger of imminent collapse, only the requirements in § 61.146 and in paragraphs (d), (e), (f), and (g) of § 61.147 apply.

(d) If at least 80 linear meters (260 linear feet) of friable asbestos materials on pipes or at least 15 square meters (160 square feet) of friable asbestos materials on other facility components are stripped or removed at a facility being renovated, all the requirements of §§ 61.146 and 61.147 apply.

(1) To determine whether paragraph (d) of this section applies to planned renovation operations involving individual nonscheduled operations, predict the additive amount of friable asbestos materials to be removed or stripped over the maximum period of time a prediction can be made, not to exceed 1 year.

(2) To determine whether paragraph (d) of this section applies to emergency renovation operations, estimate the amount of friable asbestos materials to be removed or stripped as a result of the sudden, unexpected event that necessitated the renovation.

(e) Owners or operators of demolition and renovation operations are exempt from the requirements of §§ 61.05(a), 61.07, and 61.09.

§ 61.146 Standard for demolition and renovation: Notification requirements.

Each owner or operator to which this section applies shall:

(a) Provide the Administrator with written notice of intention to demolish or renovate.

(b) Postmark or deliver the notice as follows:

(1) At least 10 days before demolition begins if the operation is described in § 61.145(a);

(2) At least 20 days before demolition begins if the operation is described in § 61.145(b);

(3) As early as possible before demolition begins if the operation is described in § 61.145(c);

(4) As early as possible before renovation begins.

(c) Include the following information in the notice:

(1) Name and address of owner or operator.

(2) Description of the facility being demolished or renovated, including the size, age, and prior use of the facility.

(3) Estimate of the approximate amount of friable asbestos material present in the facility in terms of linear feet of pipe, and surface area on other facility components. For facilities described in § 61.145(b), explain techniques of estimation.

[61.146(c)(3) corrected by 49 FR 25453, June 21, 1984]

(4) Location of the facility being demolished or renovated.

(5) Scheduled starting and completion dates of demolition or renovation.

(6) Nature of planned demolition or renovation and method(s) to be used.

(7) Procedures to be used to comply with the requirements of this Subpart.

(8) Name and location of the waste disposal site where the friable asbestos waste material will be deposited.

(9) For facilities described in § 61.145(c), the name, title, and authority of the State or local governmental representative who has ordered the demolition.

(Approved by the Office of Management and Budget under control number 2000-0264.)

§ 61.147 Standard for demolition and renovation: Procedures for asbestos emission control.

Each owner or operator to whom this section applies shall comply with the following procedures to prevent emissions of particulate asbestos material to the outside air:

(a) Remove friable asbestos materials from a facility being demolished or renovated before any wrecking or dismantling that would break up the materials or preclude access to the materials for subsequent removal. However, friable asbestos materials need not be removed before demolition if:

(1) They are on a facility component that is encased in concrete or other similar material; and

(2) These materials are adequately wetted whenever exposed during demolition.

(b) When a facility component covered or coated with friable asbestos materials is being taken out of the facility as units or in sections:

(1) Adequately wet any friable asbestos materials exposed during cutting or disjointing operations; and

(2) Carefully lower the units or sections to ground level, not dropping them or throwing them.

(c) Adequately wet friable asbestos materials when they are being stripped from facility components before the members are removed from the facility. In renovation operations, wetting that would unavoidably damage equipment is not required if the owner or operator:

(1) Asks the Administrator to determine whether wetting to comply with this paragraph would unavoidably damage equipment, and, before beginning to strip, supplies the Administrator with adequate information to make this determination; and

(2) When the Administrator doe[illegible] termine that equipment damage [illegible] be unavoidable, uses a local exha[illegible] ventilation and collection system designed and operated to capture the particulate asbestos material produced by the stripping and removal of the friable asbestos materials. The system must exhibit no visible emissions to the outside air or be designed and operated in accordance with the requirements in § 61.154.

(d) After a facility component has been taken out of the facility as units or in sections, either:

(1) Adequately wet friable asbestos materials during stripping; or

(2) Use a local exhaust ventilation and collection system designed and operated to capture the particulate asbestos material produced by the stripping. The system must exhibit no visible emissions to the outside air or be designed and operated in accordance with the requirements in § 61.154.

(e) For friable asbestos materials that have been removed or stripped:

(1) Adequately wet the materials to ensure that they remain wet until they are collected for disposal in accordance with § 61.152; and

(2) Carefully lower the materials to the ground or a lower floor, not dropping or throwing them; and

(3) Transport the materials t[illegible] ground via dust-tight chutes or [illegible]tainers if they have been removed or stripped more than 50 feet above ground level and were not removed as units or in sections.

(f) When the temperature at the point of wetting is below 0°C (32°F):

(1) Comply with the requirements of paragraphs (d) and (e) of this section. The owner or operator need not comply with the other wetting requirements in this section; and

(2) Remove facility components coated or covered with friable asbestos materials as units or in sections to the maximum extent possible.

(g) For facilities described in § 61.145(c), adequately wet the portion of the facility that contains friable asbestos materials during the wrecking operation.

§ 61.148 Standard for spraying.

The owner or operator of an operation in which asbestos-containing ma-

terials are spray applied shall comply with the following requirements:

(a) Use materials that contain 1 percent asbestos or less on a dry weight basis for spray-on application on buildings, structures, pipes, and conduits, except as provided in paragraph (c) of this section.

(b) For spray-on application of materials that contain more than 1 percent asbestos on a dry weight basis on equipment and machinery, except as provided in paragraph (c) of this section:

(1) Notify the Administrator at least 20 days before beginning the spraying operation. Include the following information in the notice:

(i) Name and address of owner or operator.

(ii) Location of spraying operation.

(iii) Procedures to be followed to meet the requirements of this paragraph.

(2) Discharge no visible emissions to the outside air from the spray-on application of the asbestos-containing material or use the methods specified by § 61.154 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air.

(c) The requirements of paragraphs (a) and (b) of this section do not apply to the spray-on application of materials where the asbestos fibers in the materials are encapsulated with a bituminous or resinous binder during spraying and the materials are not friable after drying.

(d) Owners and operators of sources subject to this section are exempt from the requirements of §§ 61.05(a), 61.07, and 61.09.

(Approved by the Office of Management and Budget under control number 2000-0264.)

§ 61.149 Standard for fabricating.

(a) *Applicability.* This section applies to the following fabricating operations using commercial asbestos:

(1) The fabrication of cement building products.

(2) The fabrication of friction products, except those operations that primarily install asbestos friction materials on motor vehicles.

(3) The fabrication of cement or silicate board for ventilation hoods; ovens; electrical panels; laboratory furniture, bulkheads, partitions, and ceilings for marine construction; and flow control devices for the molten metal industry.

(b) *Standard.* Each owner or operator of any of the fabricating operations to which this section applies shall either:

(1) Discharge no visible emissions to the outside air from any of the operations or from any building or structure in which they are conducted; or

(2) Use the methods specified by § 61.154 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air.

§ 61.150 Standard for insulating materials.

After the effective date of this regulation, no owner or operator of a facility may install or reinstall on a facility component any insulating materials that contain commercial asbestos if the materials are either molded and friable or wet-applied and friable after drying. The provisions of this paragraph do not apply to spray-applied insulating materials regulated under § 61.148.

§ 61.151 Standard for waste disposal for asbestos mills.

Each owner or operator of any source covered under the provisions of § 61.142 shall:

(a) Deposit all asbestos-containing waste material at waste disposal sites operated in accordance with the provisions of § 61.156; and

(b) Discharge no visible emissions to the outside air from the transfer of asbestos waste from control devices to the tailings conveyor, or use the methods specified by § 61.154 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air. Dispose of the asbestos waste from control devices in accordance with § 61.152(b) or paragraph (c) of this section; and

(c) Discharge no visible emissions to the outside air during the collection, processing, packaging, transporting, or deposition of any asbestos-containing waste material, or use one of the disposal methods specified in paragraphs (c) (1) or (2) of this section, as follows:

(1) Use a wetting agent as follows:

(i) Adequately mix all asbestos-containing waste material with a wetting agent recommended by the manufacturer of the agent to effectively wet dust and tailings, before depositing the material at a waste disposal site. Use the agent as recommended for the particular dust by the manufacturer of the agent.

(ii) Discharge no visible emissions to the outside air from the wetting operation or use the methods specified by § 61.154 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air.

(iii) Wetting may be suspended when the ambient temperature at the waste disposal site is less than −9.5°C (15°F). Determine the ambient air temperature by an appropriate measurement method with an accuracy of ± 1°C (± 2°F), and record it at least hourly while the wetting operation is suspended. Keep the records for at least 2 years in a form suitable for inspection.

(2) Use an alternative disposal method that has received prior approval by the Administrator.

§61.152 Standard for waste disposal for manufacturing,demolition, renovation, spraying, and fabricating operations.

Each owner or operator of any source covered under the provisions of §§61.147 and 61.149 shall:

[61.152 corrected by 49 FR 25453, June 21, 1984]

(a) Deposit all asbestos-containing waste material at waste disposal sites operated in accordance with the provisions of §61.156; and

(b) Discharge no visible emissions to the outside air during the collection, processing (including incineration), packaging, transporting, or deposition of any asbestos-containing waste material generated by the source, or use one of the disposal methods specified in paragraphs (b)(1), (2), or (3) of this section, as follows:

(1) Treat asbestos-containing waste material with water:

(i) Mix asbestos waste from control devices with water to form a slurry; adequately wet other asbestos-containing waste material; and

(ii) Discharge no visible emissions to the outside air from collection, mixing and wetting operations, or use the methods specified by § 61.154 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air; and

(iii) After wetting, seal all asbestos containing waste material in leak-tight containers while wet; and

(iv) Label the containers specified in paragraph (b)(1)(iii) as follows:

[Sec. 61.152(b)(1)(iv)]

CAUTION

Contains Asbestos-
Avoid Opening or
Breaking Container
Breathing Asbestos is Hazardous
to Your Health

Alternatively, use warning labels specified by Occupational Safety and Health Standards of the Department of Labor, Occupational Safety and Health Administration (OSHA) under 29 CFR 1910.1001(g)(2)(ii).

[61.152(b)(1)(iv) corrected by 49 FR 25453, June, 21, 1984]

(2) Process asbestos-containing waste material into nonfriable forms:

(i) Form all asbestos-containing waste material into nonfriable pellets or other shapes; and

(ii) Discharge no visible emissions to the outside air from collection and processing operations, or use the methods specified by § 61.154 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air.

(3) Use an alternative disposal method that has received prior approval by the Administrator.

§ 61.153 Standard for inactive waste disposal sites for asbestos mills and manufacturing and fabricating operations.

Each owner or operator of any inactive waste disposal site that was operated by sources covered under § 61.142, § 61.144, or § 61.149 and received deposits of asbestos-containing waste material generated by the sources, shall

(a) Comply with one of the following:

(1) Either discharge no visible emissions to the outside air from an inactive waste disposal site subject to this paragraph; or

(2) Cover the asbestos-containing waste material with at least 15 centimeters (6 inches) of compacted nonasbestos-containing material, and grow and maintain a cover of vegetation on the area adequate to prevent exposure of the asbestos-containing waste material; or

(3) Cover the asbestos-containing waste material with at least 60 centimeters (2 feet) of compacted nonasbestos-containing material, and maintain it to prevent exposure of the asbestos-containing waste; or

(4) For inactive waste disposal sites for asbestos tailings, apply a resinous or petroleum-based dust suppression agent that effectively binds dust and controls wind erosion. Use the agent as recommended for the particular asbestos tailings by the manufacturer of the dust suppression agent. Obtain prior approval of the Administrator to use other equally effective dust suppression agents. For purposes of this paragraph, waste crankcase oil is not considered a dust suppression agent.

(b) Unless a natural barrier adequately deters access by the general public, install and maintain warning signs and fencing as follows, or comply with paragraph (a)(2) or (a)(3) of this section.

(1) Display warning signs at all entrances and at intervals of 100 m (330 feet) or less along the property line of the site or along the perimeter of the sections of the site where asbestos-containing waste material was deposited. The warning signs must:

(i) Be posted in such a manner and location that a person can easily read the legend; and

(ii) Conform to the requirements for 51 cm×36 cm (20"×14") upright format signs specified in 29 CFR 1910.145(d)(4) and this paragraph; and

(iii) Display the following legend in the lower panel with letter sizes and styles of a visibility at least equal to those specified in this paragraph.

Legend	Notation
Asbestos Waste Disposal Site	2.5 cm (1 inch) Sans Serif, Gothic or Block
Do Not Create Dust	1.9 cm (¾ inch) Sans Serif, Gothic or Block
Breathing Asbestos is Hazardous to Your Health.	14 Point Gothic.

Spacing between any two lines must be at least equal to the height of the upper of the two lines.

(2) Fence the perimeter of the site in a manner adequate to deter access by the general public.

(3) Upon request and supply of appropriate information, the Administrator will determine whether a fence or a natural barrier adequately deters access by the general public.

(c) The owner or operator may use an alternative control method that has received prior approval of the Administrator rather than comply with the requirements of paragraph (a) or (b) of this section.

§ 61.154 Air-cleaning.

(a) The owner or operator who elec to use air-cleaning, as permitted by §§ 61.142, 61.144, 61.147(c)(2), 61.147(d)(2), 61.148(b)(2), 61.149(b), 61.151(b), 61.151(c)(1)(ii), 61.152(b)(1)(ii), and 61.152(b)(2) shall:

[61.154(a) corrected by 49 FR 25453, June, 21, 1984]

(1) Use fabric filter collection devices, except as noted in paragraph (b) of this section, doing all of the following:

(i) Operating the fabric filter collection devices at a pressure drop of no more than .995 kilopascal (4 inches water gage), as measured across the filter fabric; and

[61.154(a)(i) corrected by 49 FR 25453, June, 21, 1984]

(ii) Ensuring that the airflow permeability, as determined by ASTM Method D737-75, does not exceed 9 $m^3/min/m^2$ (30 $ft^3/min/ft^2$) for woven fabrics or 11 $^3/min/m^2$(35 $ft^3/min/ft^2$) for felted fabrics, except that 12 $m^3/min/m^2$ (40 ft^3min/ft^2) for woven and 14 $m^3/min/m^2$ (45 ft $^3min/ft^2$) for felted fabrics is allowed for filtering air from asbestos ore dryers; and

(iii) Ensuring that felted fabric weighs at least 475 grams per square meter (14 ounces per square yard) ar is at least 1.6 millimeters (one-s teenth inch) thick throughout; and

(iv) Avoiding the use of synthetic fabrics that contain fill yarn other than that which is spun.

(2) Properly install, use, operate, and maintain all air-cleaning equipment authorized by this section. Bypass devices may be used only during upset or emergency conditions and then only for so long as it takes to shut down the operation generating the particulate asbestos material.

(b) There are the following exceptions to paragraph (a)(1):

(1) If the use of fabric creates a fire or explosion hazard, the Administrator may authorize as a substitute the use of wet collectors designed to operate with a unit contacting energy of at least 9.95 kilopascals (40 inches water gage pressure).

(2) The Administrator may authorize the use of filtering equipment

other than that described in paragraphs (a)(1) and (b)(1) of this section if the owner or operator demonstrates to the Administrator's satisfaction that it is equivalent to the described equipment in filtering particulate asbestos material.

§ 61.155 Reporting.

(a) Within 90 days after the effective date of this subpart, each owner or operator of any existing source to which this subpart applies shall provide the following information to the Administrator, except that any owner or operator who provided this information prior to April 5, 1984 in order to comply with § 61.24 (which this section replaces) is not required to resubmit it.

(1) A description of the emission control equipment used for each process; and

(2) If a fabric filter device is used to control emissions, the pressure drop across the fabric filter in inches water gage; and

(i) If the fabric device uses a woven fabric, the airflow permeability in $m^3/min/m^2$ and; if the fabric is synthetic, whether the fill yarn is spun or not spun; and

(ii) If the fabric filter device uses a felted fabric, the density in g/m^2, the minimum thickness in inches, and the airflow permeability in $m^3/min/m^2$.

(3) For sources subject to §§ 61.151 and 61.152:

(i) A brief description of each process that generates asbestos-containing waste material; and

(ii) The average weight of asbestos-containing waste material disposed of, measured in kg/day; and

(iii) The emission control methods used in all stages of water disposal; and

(iv) The type of disposal site or incineration site used for ultimate disposal, the name of the site operator, and the name and location of the disposal site.

(4) For sources subject to § 61.153:

(i) A brief description of the site; and

(ii) The method or methods used to comply with the standard, or alternative procedures to be used.

(b) The information required by paragraph (a) of this section must accompany the information required by § 61.10. The information described in this section must be reported using the format of Appendix A of this part.

(Approved by this Office of Management and Budget under control number 2000-0264)

§ 61.156 Active waste disposal sites.

To be an acceptable site for disposal of asbestos-containing waste material under §§ 61.151 and 61.152, an active waste disposal site must meet the requirements of this section.

(a) Either there must be no visible emissions to the outside air from any active waste disposal site where asbestos-containing waste material has been deposited, or the requirements of paragraph (c) or (d) of this section must be met.

(b) Unless a natural barrier adequately deters access by the general public, either warning signs and fencing must be installed and maintained as follows, or the requirements of paragraph (c)(1) of this section must be met.

(1) Warning signs must be displayed at all entrances and at intervals of 100 m (330 ft) or less along the property line of the site or along the perimeter of the sections of the site where asbestos-containing waste material is deposited. The warning signs must:

(i) Be posted in such a manner and location that a person can easily read the legend; and

(ii) Conform to the requirements of 51 cm × 36 cm (20" × 14") upright format signs specified in 29 CFR 1910.145(d)(4) and this paragraph; and

(iii) Display the following legend in the lower panel with letter sizes and styles of a visibility at least equal to those specified in this paragraph.

Legend	Notation
Asbestos Waste Disposal Site	2.5 cm (1 inch) Sans Serif, Gothic or Block
Do Not Create Dust	1.9 cm (¾ inch) Sans Serif, Gothic or Block.
Breathing Asbestos is Hazardous to Your Health.	14 Point Gothic.

Spacing between any two lines must be at least equal to the height of the upper of the two lines.

(2) The perimeter of the disposal site must be fenced in a manner adequate to deter access by the general public.

(3) Upon request and supply of appropriate information, the Administrator will determine whether a fence or a natural barrier adequately deters access by the general public.

(c) Rather than meet the no visible emission requirement of paragraph (a) of this section, an active waste disposal site would be an acceptable site if at the end of each operating day, or at least once every 24-hour period while the site is in continuous operation, the asbestos-containing waste material which was deposited at the site during the operating day or previous 24-hour period is covered with either.

(1) At least 15 centimeters (6 inches) of compacted nonasbestos-containing material, or

(2) A resinous or petroleum-based dust suppression agent that effectively binds dust and controls wind erosion. This agent must be used as recommended for the particular dust by the manufacturer of the dust suppression agent. Other equally effective dust suppression agents may be used upon prior approval by the Administrator. For purposes of this paragraph, waste crankcase oil is not considered a dust suppression agent.

(d) Rather than meet the no visible emission requirement of paragraph (a) of this section, an active waste disposal site would be an acceptable site if an alternative control method for emissions that has received prior approval by the Administrator is used.

Subpart V—National Emission Standard for Equipment Leaks (Fugitive Emission Sources)

[Subpart V added by 49 FR 23512, June 6, 1984; Corrected by 49 FR 38946, October 2, 1984]

§61.240 Applicability and designation of sources.

(a) The provisions of this subpart apply to each of the following sources that are intended to operate in volatile hazardous air pollutant (VHAP) service: pumps, compressors, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, flanges and other connectors, product accumulator vessels, and control devices or systems required by this subpart.

(b) The provisions of this subpart apply to the sources listed in paragraph (a) after the date of promulgation of a specific subpart in Part 61.

Attachment 6

Asbestos

Subject: Interoffice Correspondence EG&G Idaho, Inc.

Date: February 7, 1986

From: J. Crone, EG&G Idaho, Inc., Crone-11-86

To: R. L. Billau, EG&G Idaho, Inc.

EG&G Idaho

640120
0309

INTEROFFICE CORRESPONDENCE

Date: February 7, 1986

To: R. L. Billau

From: J. Crone

Subject: OPERATION OF THE LANDFILL FOR THE DISPOSAL OF ASBESTOS - Crone-11-86

Ref: R. L. Billau ltr to J. Crone, Bill-12-86, Operation of the Landfill for the Disposal of Asbestos, February 4, 1986.

Management for disposing of asbestos materials in the INEL Sanitary Landfill is in accordance with EG&G Safety Manual 11030 Rev. 5 and 40 CFR 61.156 C.1.

Safety Manual reads in part:

"Solid asbestos waste may be disposed of at the INEL Sanitary Landfill if the requirements of 40 CFR 61.156 and the following are met:

1. The items are double bagged in YELLOW 5-mil or thicker, polyethylene wrap, taped or sealed, and labeled.

2. The asbestos material must be covered with a minimum of 15 cm (6 in.) of compacted non-asbestos containing material within 24 hours.

3. Landfill operator is notified, prior to shipment of the contents of the waste so that special handling will be observed."

The landfill operator visually inspects the shipment to verify compliance to SM 11030 Rev. 5 and 40 CFR 61.156 prior to disposal.

jls

cc: J. L. Clark
J. M. Gural
J. H. Nelson
Central File
J. Crone File

Attachment 7

Chromate

Subject: Letter discussing replacement of chromate cooling systems at Test Reactor Areas ETR and ATR with phosphate cooling systems.

Date: May 15, 1972

From: Aerojet Nuclear Company

To: E. K. Loop, U. S. Atomic Energy Commission

MAY 19 1972

REDUCTION OF TECHNICAL SUPPORT

Director's Office

CPM Br.

WM Br.

TS Br.

Return

File

Aerojet Nuclear Company

P. O. BOX 1845
IDAHO FALLS, IDAHO 83401

May 15, 1972

Mr. E. K. Loop, Director
Test Reactors Division
Idaho Operations Office
U. S. Atomic Energy Commission
Idaho Falls, Idaho 83401

NON-CHROMATE TREATMENT OF TRA SECONDARY SYSTEMS - FMc-337-72

References: (1) E. K. Loop to F. L. McMillan, 2-11-72, Non-Chromate Treatment of TRA Secondary Systems.
(2) F. L. McMillan to E. K. Loop, FMc-57-72, 1-18-72, Non-Chromate Treatment of TRA Secondary Systems.

Reference (1) requests that Aerojet Nuclear Company (ANC) proceed with the implementation of a phosphate cooling tower water treatment system to replace the chromate system with the objective of having the system in operation at both ETR and ATR by June 30, 1972.

We are proceeding in our preparations to use the phosphate treatment, but it may be possible that final conversion to the new treatment will not occur by June 30, 1972. The new phosphate chemicals are on order and clean-out of the cooling towers has been scheduled. We have been unable to obtain engineering assistance for design and installation of the test heat exchangers due to the higher priority beryllium reflector work. We are very reluctant to make the changeover without these test heat exchangers installed because of the filming that has been experienced at NRF (Reference 2) and recent Inconel 600 intergranular corrosion failures in a German reactor due to raw water in-leakage and deposition of impurities on the secondary side of their steam generators.

We plan to install the heat exchangers on both the cooling tower inlet and outlet lines at the ATR and on the outlet line at the ETR. These test heat exchangers will be operated at slightly more severe conditions than those in the reactor heat exchangers in order to detect the onset of scaling, should it occur. In addition, we will continue to obtain carbon steel corrosion data through the coupon corrosion monitoring program.

TELEPHONE · CITY OFFICES (LOCAL) 522-6640 (LD) 208-522-6640 NRTS SITE (LOCAL) 522-4400 (LD) 208-526-0111
A WHOLLY OWNED SUBSIDIARY OF AEROJET-GENERAL CORPORATION, INCORPORATED IN

MAY 18 1972

Attachment 8

Boron

Subject: Letter transmitting revision Sheet to "Proposed Program for Monitoring of the Regolith in the Vicinity of the LOFT Liquid Waste Disposal Pond". A telephone conversation memo dated May 22, 1972 on guidelines for disposal of boron solutions from the LOFT project to a disposal pond.

Date: June 3, 1972

From: H. L. Coplen, Manager LOFT Project Division, Aerojet Nuclear Company, HLC-532-72

To: R. E. Swanson, Director of LOFT Project Division, U. S. Atomic Energy Commission

RECEIVED

JUN 6 1972

REACTOR SAFETY
PROGRAM OFFICE

June 3, 1972

Mr. R. E. Swanson, Director
LOFT Project Division
Idaho Operations Office
U. S. Atomic Energy Commission
Idaho Falls, Idaho 83401

REVISION SHEET TO "PROPOSED PROGRAM FOR MONITORING OF THE REGOLITH IN THE VICINITY OF THE LOFT LIQUID WASTE DISPOSAL POND" - HLC-532-72

Reference: Coplen to Swanson Letter, HLC-352-72, dated April 12, 1972, transmittal of "Proposed Program for Monitoring of the Regolith in the Vicinity of the LOFT Liquid Waste Disposal Pond".

At the request of ID, subsequent to instructions from RDT, the boron chemical concentrations discharged to the disposal pond have been revised. Please replace the attached revised chemical tables in your copy of the referenced letter.

H. L. Coplen, Manager
LOFT Project Division

GAD:ma

Attachment

cc: Director, LOFT Project Division, ID (3)
Director, DRDT w/o Attachment
AD/PM/Chief, Water Projects Branch, DRDT (7) w/o Attachment
AD/NS, DRDT w/o Attachment
AD/ES, DRDT
Manager, ID
Director, Contracts & Support Division, ID
Director, Reactor Safety Program Office, ID
Director, Operational Safety Division, ID
Area Engineer, LOFT Project Division, ID
C. K. Leeper, ANC

CAN WE CORRECT THE CONCENTRATIONS ON THE FILE

① R.E. [illegible]
② File E.1

Copy to
G. Wehmann
6-6-72
2.4.2

AEROJET NUCLEAR COMPANY

RECORD OF TELEPHONE CONVERSATION

FROM G. A. Dinneen BRANCH NSPD DATE 5/22/72

Din-8-72

TO ID-AEC TIME 1600

CITY Idaho Falls PHONE NO. 1601

PERSON (S) CALLED John James

SUBJECT Revise Boron Concentration in Regolith Monitoring Program

Boron from LOFT operation - from a flood tank Nov RAR

S. F T S

Dugone
A. James
A. Dinneen

John James of ID-AEC called to request that the boron chemical concentration specified in the regolith monitoring program be revised to agree with the boron concentration calculated by Norm Watson of RDT-AEC. This revised boron concentratio is also to be used in the LOFT environmental statement. The revised boron concentration will allow a much larger amount of boron to be discharged to the disposal pond. However, it should be mentioned that the revised boron concentration exceeds the previous guidelines established by ID by a factor of 15. ID will suppl the justification for increasing the boron concentration to a level above the established guidelines.

Previous Guidelines were for Drinking water & Rather Arbitrary by AEC-ID personnel. Since the H2O to the Loft Pond will not be used for Drinking Water Nor will it be used for irrigation there are no Established Limits. 15 PPM was selected on the basis of natural streams containing 5-15 PPM (mg/l) Boron Coupled with documentation stating 30 mg/l (PPM) of Boron in Drinking water is not harmful plus the lack of specific Guidelines for our remote discharge.

Last Sentence (ID to supply Justification) can only be answered by transmittal to EPA!

JC 6-6-72

SIGNATURE [illegible]

CONTINUE ON REVERSE

Attachment 9

Chromate and Boron

Subject: Interoffice Correspondence evaluation of the necessity of removal of chemically contaminated soil.

Date: October 30, 1975

From: D. H. Null, Aerojet Nuclear Company, DHN-101-75

To: S. B. Letson, Aerojet Nuclear Company

CA-20

Aerojet Nuclear Company

Interoffice Correspondence

October 30, 1975

S. B. Letson
TAN 607

DISPOSAL OF CHEMICALLY CONTAMINATED SOIL AT TAN 629 - DHN-101-75

At the request of the Planning and Scheduling Branch, I have evaluated the necessity of removal of the chemically contaminated soil adjacent to TAN 629. The parameters that were considered include personnel health, an environmental release at LOFT, and adverse publicity for INEL.

Of the materials that have been identified in the spilled chemical, the chromates are the most serious problem. This is because chromium compounds may be carcinogenic. The TLV for some types of chromium-containing compounds is as low as 0.1 mg/m^3 in air. For this reason, I recommend that the chemically-contaminated soil be removed from any area where personnel will be exposed to the chromates.

There are several alternative methods for preventing personnel from being exposed to chemically contaminated soil. In my opinion, disposal of the chemically contaminated soil will ultimately be the best solution in terms of personnel health, environmental considerations, adverse publicity, and probably cost. You should contact the Waste Reduction and Reports Branch (H. M. Batchelder) of the Waste Management Division for specific instructions on properly disposing of the chemically contaminated soil. This service can also be initiated by contacting an area waste management coordinator (myself for the Safety Division and E. L. Johnson for LOFT).

So that management can be assured that no significant exposure of personnel to chromates will occur, it will be necessary to take soil samples before and after cleanup. The chemical analysis can be performed at CPP and should be a specific test for the presence of chromium or its ions. If you need assistance in arranging for these tests, please contact me.

If you have any questions, do not hesitate to call.

D H Null

D. H. Null, Supervisor
Industrial Hygiene Section
Safety Standards Branch

br

cc: HMBatchelder
LRHowe
ELJohnson
JWMcCaslin
FDStumpp
DHNull - 2
File

Attachment 10

Chromate

Subject: Notegram (Form EG&G-460) giving concurrence on disposal and handling procedure for chromate contaminated wood to CFA Landfill II.

Date: March 21, 1980

From: H. M. Batchelder, EG&G Idaho, Inc.

To: R. V. Dye, EG&G Idaho, Inc.

EG&G Idaho

FORM EG&G-460
(Rev 04-79)

NOTEGRAM

CA-60.03

Date March 21, 1980

To R. V. Dye Org. Address CFA-631

From H. M. Batchelder HMB Org. WMP-C&I Address WMO-601

This is to confirm my telecon of March 21, 1980 concerning the disposal of the ATR Cooling Tower wood in the landfill. I concur with the bulk disposal of the Cr^{+6} wood, due to the quantity of wood for disposal. Wood is to be carried in dumpsters and buried at the landfill. All handling is to be accomplished on Safe Work Permit. This action was cleared with Frank Stumpp (Ind. Hygiene) and Wayne Hathaway (who also obtained ID Safety concurrence).

PUT IT IN WRITING - WRITTEN MESSAGES SAVE TIME, PREVENT ANNOYING INTERRUPTIONS AND ERRORS

Attachment 11

Chromate

Subject: Letter requesting information and comment on disposal of waste pipe contaminated with potassium chromate to the CFA sanitary (CFA Landfill II).

Date: April 5, 1979

From: L. P. Duffy, Manager Waste Management Program, DUF-89-79

To: J. B. Whitsett, DOE-ID

bcc: H. B. Barkley, Jr
R. B. Dye
S. B. Grover
R. W. Passmore
R. L. Silverthorne
J. E. Wilkins
Central Files
L. P. Duffy File

April 5, 1979

CA-60.03

Mr. J. B. Whitsett, Chief
Radioactive Waste Programs Branch
Idaho Operations Office - DOE
Idaho Falls, ID 83401

DISPOSAL OF MTR SECONDARY PIPING - Duf-89-79

f: (a) S. B. Grover ltr to R. W. Passmore, SBG-7-79, same subject, March 2, 1979
(b) R. W. Passmore ltr to D. P. Halls, Pass-25-79, same subject, March 5, 1979
(c) D. P. Halls Document Review Form to R. W. Passmore, DPH-98-79, same subject, March 15, 1979

Dear Mr. Whitsett:

TRA identified the need to dispose of approximately 20 cubic yards of piping removed from the MTR cooling tower pumphouse (Reference (a)). The piping is internally contaminated with potassium chromate. Surveys revealed no radioactive contaminants. The chromate is the hexavalent form. Reference (a) indicated that the most economical disposal method was burial rather than excessing. Labor required to remove the potassium chromate contaminant would be quite costly in relation to the scrap value of the pipe.

EG&G Safety concurred (Reference (c)) with the proposed method of disposal contained in Reference (b). The recommended segregated disposal method noted in item 2 below meets the intent of the State of Idaho regulations for this type of waste. The proposed method of disposal is:

1. Cover the ends of the piping with plastic and tape them shut for containment during handling and transport;

2. Place the pipes in a hole dug below and at the front of the working face of the CFA Landfill;

3. Cover the pipes with soil; and

4. Log the location for recording on the Landfill map.

This letter is for your information and comment, should you desire. If no comments are received by April 16, the disposal will be conducted as proposed.

Very truly yours,

Original Signed By
L. P. Duffy

THS/for

L. P. Duffy, Manager
Waste Management Program

RWP:gbc

Attachments: referenced documents

cc: R. W. Kiehn, EG&G Idaho

Attachment 12

Chromate

Subject: Inter-Office Correspondence transmitting a section of the disposal procedure for chromate contaminated waste to the CFA sanitary (CFA Landfill II).

Date: October 19, 1979

From: J. McNeel, Morrison-Knudsen Company, Inc.

To: Distribution, Morrison-Knudsen Company, Inc.

MORRISON-KNUDSEN COMPANY, INC.

INTER-OFFICE CORRESPONDENCE

DATE: October 19, 1979

TO: Distribution

FROM: J. McNeel

LOCATION:

LOCATION: Idaho Falls, Idaho

SUBJECT: Chromate Contaminated Waste Disposal Procedure

Attached for your information and review, is a copy of the Chromate Contaminated Waste Disposal Procedure for the ATR Cooling Tower Refurbishment Subcontract S-316.

Please forward any comments to J. W. McNeel, M-K Safety at CFA-629 phone 6-2769.

JM/sec

Distribution:

W/Attachment

DOE-ID

Bill Harrie
Dennis Skinner
Mando Lopez

EG&G

A. L. Kologi
N. G. Reece
T. A. Hensley
C. R. Marlow
D. C. Hendrickson
R. L. Rolfe
H. L. Day
J. A. James
R. W. Passmore
A. L. Olsen
R. V. Dye
D. K. Chandler

M-K

T. Beasley
J. Byers
D. Brown
M. Henderson

CHROMATE CONTAMINATED WASTE DISPOSAL PROCEDURE

SUBCONTRACT S-316

1.0 PURPOSE

To establish the responsibilities and practices for handling and disposal of chromate contaminated waste from the ATR Cooling Tower Refurbishment Project.

2.0 DEFINITIONS

Chromate contaminated waste: All waste from the ATR Cooling Tower suspected of being contaminated with chromate compounds.

Designated disposal area: CFA sanitary landfill as managed by EG&G Services, Maintenance and Operations Branch (SMO).

Subcontractor: Ecodyne Corporation

3.0 PRACTICE

3.1 Daily Work Authorization

3.1.1 The TRA Work Control Permit will be completed as per subcontract S-316 special conditions. This includes obtaining the signature of the ATR shift supervisor at the commencement of work each morning.

3.2 Handling Procedures

3.2.1 Necessary personal protective equipment will be provided by the subcontractor and worn by all personnel handling suspected contaminated material. This will include respiratory, skin and eye protection. The degree of respiratory protection will be determined by M-K Safety and Ecodyne supervision relative to the specific job; such as, wood cutting, handling, etc.

3.2.2 To prevent release of chromate contaminated material, smaller pieces (less than 2 ft. in length) will be placed in labeled bags and sealed or wrapped in poly or other suitable material and labeled. Larger pieces of material (if not immediately loaded on trucks and removed to the designated area) will be stacked in a barricaded and identified area until shipped to the disposal area.

3.3 Disposal Procedures

3.3.1 The subcontractor must notify MK/TRA construction engineer at least 48 hours prior to shipment of any contaminated material to the designated disposal area. The subcontractor should give approximate time of shippment and approximate amount of material being shipped.

3.3.2 All waste material must be surveyed by TRA Health Physics prior to removal from the TRA area. A "Health Physics Request for Removal Tag (Green Tag)" must be obtained.

3.3.3 EG&G Services, Maintenance and Operations Branch will identify for the subcontractor the exact location at the disposal site where the chromate contaminated waste shall be dumped.

Debris - handle in accordance with our SP [illegible]

Attachment 13

Chromate, Boron, and Morpholine

Subject: Memo on information related to chromate and boron solutions and morpholine use and disposal at NRF.

Date: April 1, 1993

From: S. H. McCormick, EG&G Idaho, Inc.

To: G. J. Stormberg, EG&G Idaho, Inc.

Memo

From: S.H. McCormick, WAG 4
To: G.J. Stormberg
Date: April 1, 1993
Subject: OU4-12 Work Plan Comment Response

The INWMIS database has entries for chromates, chromate solutions, boron solutions and morpholine having been disposed in Landfill 2. According to the database these wastes were generated at NRF and disposed at the landfill. The date and amounts of disposal are shown below.

Chromate solutions & chromates			
May 31, 1972	624.6	October 31, 1972	2,914.7
November 30, 1972	15,898.3	February 28, 1973	1,249.1
March 31, 1973	1,249.1	June 30, 1973	2,744.3
		Total	**24,680.7**
Boron Solutions			
January 31, 1972	1,760.2	February 29, 1972	567.8
May 31, 1972	5,621.2	**Total**	**7,949.2**
Morpholine			
July 31, 1971	359.6		

Telephone conversations on March 30 and April 1, 1993 with Dolf Sierre of NRF revealed the following information about these wastes. The chromate solutions and chromates refer to chromium which was typically added to the cooling water in the secondary cooling loop of a reactor as a corrosion inhibitor. The solutions would normally not have been radioactively contaminated because would not have come into contact with radioactive materials during normal reactor operations. The concentration of chromium typically ranged from 10 to 14 mg/L according to Dolf. This concentration was also used in the ETR at the Test Reactor Area (taken from *Monitoring, Analysis, and Test Plan TRA-36 ETR Cooling Tower*, EGG-ER-8544, April 1989, W. R. Pigott). According to Mr. Sierre the chromate solutions which were disposed at CFA Landfill II were most likely the result of leaks or spills from the secondary cooling systems. The solutions would have been absorbed onto kitty litter (diatomaceaous earth) and rags and put into drums with sealed lids. The drums would have been surveyed or sampled before exiting NRF and if found nonradioactively contaminated disposed at CFA Landfill. The INWMIS data base indicates the chromate solutions were disposed as liquids, however, it is likely that the drums contained the kitty litter and rags which were used to absorb the solution. The drums were probably not completely filled of liquid.

Boron solutions were most likely used for criticality control in a reactor primary cooling loop or in a fuel storage pool. The wastes disposed in the landfills would have been absorbed and placed in sealed drums and handled in the same manner as chomate solutions. Boron solutions could be radiologically contaminated if a leak occurred from the primary cooling loop. The waste boron solutions may also have been generated from a storage tank kept at NRF. The tank held boron solutions awaiting use in a reactor. If a leak from this tank occurred the solution would not have been radiologically contaminated. Dolf did not know the typical concentration of boron solutions used at NRF during that time.

Morpholine was likely used as a solvent (see attached copy from Merc Index).

Attachment 14

Chromate and Boron

Subject: Memo of Conversation (Form EG&G-561) on disposal practices from Naval Reactors Facility to CFA Landfills.

Date: March 30, 1993

Interviewer: Steven H. McCormick, EG&G Idaho, Inc.

Interviewee: Dolf Sierre, Westinghouse Electric Corporation

EG&G Idaho, Inc.

Form: EG&G-561

MEMO OF CONVERSATION

Person Calling: Steve McCormick | Date: March 30 & April 1, 1993

Representing Org: WAG 4 | Time:

Person Called: Dolf Sierre | Phone No. 533-5022

Representing Company: WAG 8, Naval Reactors Facility

Subject: Disposal practices at CFA Landfill 2 & Landfill 3 (closed portion).Telephone Conversation

Subject: Wastes from NRF disposed in CFA Landfill 2

I discussed the shipments of chromate and boron solutions with Dolf during 2 phone calls. Dolf reviewed archived information from the early 1970's on shipments of waste. He read from several letters dated 1973, 74 and 75 which discussed shipments and handling of radioactive and nonradioactive wastes. He also read from a shipping form which was used for shipments in the early 1970's. I requested copies of the letters and other information from Dolf. He said that he would need to clear it with Rick Nieslanic, WAG 8 Manger before sending the information. The discussion is summarized below.

Chromates were used in secondary cooling loops of reactors. They were also used in other water treatment systems which were not associated with reactors. The concentration of chromium in water was approximately 10 to 14 ppm (mg/l). Shipments of chromate solutions would have been nonradiologically contaminated water containing chromium which was used in the secondary cooling loop. It would have been absorbed using kitty litter (diatomaceous earth) and placed in drums before shipment to the landfill. Dolf was not aware of the uses of boron solutions at NRF and referred me to Jeff Fraizier who is researching past operations and facilities at NRF.

Procedures existed at NRF during this era to segregate radioactive waste from nonradioactive waste. Radioactive waste would have been treated or stored at NRF or RWMC and would not have been shipped to CFA landfills. Letters and shipping forms indicated that procedures were followed to ensure that radioactively contaminated waste was sampled or surveyed before leaving NRF.

Additional Information

Boron and morpholine are referenced in the MERC Index (pages attached). It is known that boron is used in nuclear reactors as a nuetron absorber for criticality control. Boron was likely used in the primary cooling loop or in a fuel storage pool. The boron was probably in the form of boric acid when disposed at CFA Landfill 2. Also, the NIOSH Manual indicates that the primary route of exposure is inhalation of dust contaminated with boric acid.

Steven H. McCormick, March 30 & April 1, 1994

Attachment 15

Boron and Chromate Solutions, Morpholine, and Paint

Subject: Memo of Conversation (Form EG&G-561) on disposal practices at NRF to CFA Landfills.

Date: April 14, 1993

Interviewer: Steven H. McCormick, EG&G Idaho, Inc.

Interviewee: Mark Hutchinson, Westinghouse Electric Corporation

EG&G Idaho, Inc.

Form: EG&G-561

MEMO OF CONVERSATION

Person Calling: Steve McCormick | Date: April 14, 1993

Representing Org: WAG 4 | Time:

Person Called: Mark Hutchinson | Phone No. 533-5509

Representing Company: Westinghouse, Naval Reactors Facility

Subject: Disposal practices at NRF to CFA Landfill II & Landfill III (closed portion).

Questions on past disposal practices of NRF to the landfills were raised upon review of the INWIMS data for the landfills. The questions were asked NRF personnel including Mark Hutchinson and Dolf Sierre. Dolf has collected information related to waste disposal from NRF to the landfills. The types of wastes involved are listed below. Based on the waste disposal information Mr. Hutchinson feels positive that these wastes are not radioactively contaminated.

Boron Solutions - The purpose of boron solutions is classified information according to Mr. Hutchinson and cannot be disclosed.

Morpholine - The purpose and use of morpholine is classified information and cannot be disclosed.

Chromate solutions - Chromium was used as a rust inhibitor in the secondary cooling loops of reactors and in cooling towers. The cooling tower system would interface with the secondary system without exchange of fluids from one system to the other. Mr. Hutchinson referenced two forms (ID 110) which were used at NRF to ship waste to the landfill. One form indicated that 1249 liters were shipped in 55 gallon drums on 2/28/73. The other form indicated that 275 gallons of chromated water was shipped to the landfill on 6/7/73 in 55 gallon drums. He will send me copies of the forms he has available.

Paint - Mr. Hutchinson referred to a shipment of used paint sent to the landfills on 3/23/1973 from a storeroom at NRF. The amount of paint sent was 60 cubic feet sent in 380 1-gallon containers and a few 5-gallon containers. He felt the reason for the shipment was that the paint had exceeded its shelf life and if this were the case the paint cans would have been full. The type of paint is not mentioned.

I asked Mr. Hutchinson did not have any information on the waste oil or sludge shipped to the landfill. He will research this and contact me.

Steven H. McCormick, 4/14/1993

Attachment 16

Ordnance

Subject: Interoffice Correspondence on removal of buried ordnance in CFA Landfill II.

Date: August 25, 1978

From: R. W. Passmore, EG&G Idaho, Inc., PASS-69-78

To: L. P. Duffy, EG&G Idaho, Inc.

EG&G Idaho

CA-60.03

INTEROFFICE CORRESPONDENCE

date August 25, 1978

to L. P. Duffy

from R. W. Passmore R. W. Passmore

subject BURIED EXPLOSIVE ORDNANCE IN CFA LANDFILL ; Pass-69-78

Ref: (a) F. H. Tingey ltr to R. B. O'Brien, Ti-290-77, Buried Explosive Ordnance - CFA Gravel Pit, Aug 9, 1977 (Not Sent)
(b) F. H. Tingey memo to R. B. O'Brien, Memo, Same Subject, August 18, 1977

Attached is a description of the military ordnance potential hazard at the CFA Landfill (reference (a)). This description was not sent to R. B. O'Brien. Dr. Tingey elected to provide notice via reference (b).

Following Dr. Tingey's memo, I was informed that R. B. O'Brien had authorized R. C. Green to prepare a procedure and then remove the explosive ordnance.

No action was taken during the winter months due to freezing conditions. We are fast approaching those same conditions, and R. C. Green informed me during the week of August 14, 1978 that he has not been able to take any action to date.

I think this is a very serious potential hazard, and EG&G cannot and should not ignore it.

Perhaps you may be able to expedite removal of this potential hazard.

gbc

Attachments:
As stated

cc: R. C. Green
A. E. Grey
Central Files
R. W. Passmore File

Green contacted today. The shell removal is very down on the priority list he has from his boss. As a result I talked to A. L. Olsen who said he would try to get the mail removed. Feeling that he will have the suspect area fenced of with a permanent type fence, a metal pipe + cyclone wire.

MON

FORM EG&G 954
(Rev. 2-77)

Attachment 17

Resin

Subject: Memo of Conversation on disposal of resin from the Test Reactor Area demineralizer plant to CFA, Landfill II.

Date: April 22, 1993

Interviewer: Steven H. McCormick, EG&G Idaho, Inc.

Interviewee: Del VanOrden, EG&G Idaho, Inc.

EG&G Idaho, Inc.

Form: EG&G-561

MEMO OF CONVERSATION

Person Calling: Steve McCormick | Date: April 22, 1993

Representing Org: WAG 4 | Time:

Person Called: Del Vanorden | Phone No. 526-4331

Representing Company: TRA Power Reactor Programs

Subject: Disposal practices at CFA Landfill 2 & Landfill 3 (closed portion).

Subject: Wastes from TRA disposed in CFA Landfill 2

I spoke with Del about information in the Industrial Information Management Information Service (INWMIS) and past operations at Landfill 2 during 1974. Del worked at TRA during 1974.

The INWMIS database indicates resin was disposed to CFA Landfill 2 on July 23, 1974 (13,188.6 kg) and on August 31, 1974 (4,396 kg). Del worked at the TRA demineralizer plant (TRA-608) during 1974. The resin was disposed at Landfill 2 as a result of replacement of the resin in the beds of the plant. The total amount of resin held in the beds is 400 cu ft. The plant consists of four beds each with 100 cu ft capacity. According to Del the resin disposed at CFA Landfill 2 would not have been radiologically contaminated and would have been cleaned or flushed before disposal.

Additional Information:

The Merc Index indicates these resins are likely polyacrylic polycarboxilic which are used for ion exchange resins.

The total amount of resin disposed was 17,584 kg (38,765 lb). If 400 cu ft of resin was disposed the density would be: 38,765 lb/400 cu ft = 97 lb/cu ft.

Steven H. McCormick 4/22/93