

PROPOSED PLAN AND DRAFT MODIFICATION OF COLORADO HAZARDOUS WASTE PERMIT FOR ROCKY FLATS PLANT OPERABLE UNIT 16: LOW PRIORITY SITES

United States Department
of Energy (DOE)

Jefferson County, Colorado November 8, 1993

DOE Announces Preferred Alternative for OU 16, Low Priority Sites

The U.S. Department of Energy (DOE) has announced its preferred alternative to address the Low Priority Sites of the Rocky Flats Plant Site located north of Golden, Colorado in Jefferson County. DOE is the lead agency for the cleanup at the Site.

The preferred remedy for the soils is the "No Action" alternative for *Individual Hazardous Substance Sites (IHSSs)*¹ 185, 192, 193, 194, 195 within *Operable Unit 16 (OU 16)*. In accordance with Environmental Protection Agency Guidance (1989a), a no further action decision is appropriate at sites where a previous removal action or natural environmental processes mitigate risks to human health and the environment. Past cleanup actions or natural processes have eliminated the hazardous substances or the *exposure pathways*. Previous cleanup actions and natural processes may not have eliminated the hazardous substances or exposure pathways for IHSSs 196 and 197 within OU 16. Because of this, hazardous sites 196 and 197 will be transferred for further investigation into OU 5 (Woman Creek Drainage) and OU 13 (100 Area), respectively.

All interested parties are encouraged to read and comment on this Proposed Plan/Draft Hazardous Waste Permit Modification and the Final "No Further Action Justification" Document, prepared by DOE in cooperation with the Environmental Protection Agency (EPA) and the Colorado Department of Health (CDH). These documents describe the history of these IHSSs and cleanup alternatives considered, and are available for public review at the information repositories listed at the bottom of this page.

DOE, EPA and CDH will make the final remedy selection and a decision on the Hazardous Waste Permit Modification, only after considering regulatory agency, community, and other comments. A summary of responses to all comments will be released for public review. Following public comment, DOE will publish a *Record of Decision (ROD)* and CDH will issue a Final Hazardous Waste Permit Modification responding to all comments received and documenting the rationale for the decision.

The Proposed Plan

This Proposed Plan represents the preferred alternative for the Low Priority Sites. **This Plan applies only to Operable Unit (OU) 16.**

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ADMINISTRATIVE RECORD

MARK YOUR CALENDAR: OPPORTUNITIES FOR PUBLIC INVOLVEMENT

<p>Public Comment Period: November 8, 1993 to January 7, 1994</p> <p>Public Hearing: December 8, 1993</p> <p>Location: Denver Marriot West I-70 at Exit 263 Golden</p> <p>Time: 9:00-10:00 p.m.</p> <p>Send Comments To: DOE's External Affairs Office P.O. Box 928, Golden, CO 80402-0928</p> <p>Jeffrey Swanson, Engineer, ph: (303) 692-3416 Colorado Department of Health/HMWMD-HWC-B2 4300 Cherry Creek Drive South, Denver, CO 80222-1530</p>	<p>Information Repositories: Rocky Flats Public Reading Room Front Range Community College Level B 3645 W. 112th Avenue Westminster, CO 80030</p> <p>Colorado Department of Health Hazardous Materials and Waste Management Division 4300 Cherry Creek Drive South Denver, CO 80222</p>	<p>Colorado Council on Rocky Flats 1536 Cole Boulevard, Suite 150 Denver West Office Park, Bldg., 4 Golden, CO 80401</p> <p>Standley Lake Library 8485 Kipling Arvada, CO 80005</p> <p>EPA Superfund Records Center 999 18th Street, Suite 500 Denver, CO 80202-2466</p>
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¹Words shown in *italics* on the first mention are defined in the glossary at the end of this Proposed Plan.

Cleanup at the Rocky Flats Plant is being administered under both the *Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)* of 1980, as amended by the *Superfund Amendments and Reauthorization Act (SARA)* of 1986, and the Rocky Flats Hazardous Waste Permit, issued by CDH as a requirement of the Colorado Hazardous Waste Regulations (CHWR), 6 CCR 1007-3. This proposed plan is prepared in fulfillment of DOE's delegated public participation responsibilities as the lead agency under Sections 113 (k) and 117 (a) of CERCLA. This Draft Permit Modification per Executive Order 12580 is prepared in fulfillment of CDH's public participation responsibilities under Section 100.60 of CHWR concerning modification of the Hazardous Waste Permit to incorporate remedial action decisions at the Rocky Flats Plant.

PUBLIC INVOLVEMENT PROCESS

A public comment period will be held concurrently for both this Proposed Plan and this Draft Permit Modification. This public comment period will be from November 8, 1993 to January 7, 1994. A public hearing will be held on December 8, 1993. Comments on the Proposed Plan/Draft Permit Modification may be submitted orally or in writing at the public hearing, or written comments, postmarked no later than January 3, 1994, can be sent to addressees on first page.

Upon timely request, the comment period may be extended. Such a request should be submitted in writing to DOE, postmarked no later than January 3, 1994. **FAILURE TO RAISE AN ISSUE OR PROVIDE INFORMATION DURING THE PUBLIC COMMENT PERIOD MAY PREVENT YOU FROM RAISING THAT ISSUE OR SUBMITTING SUCH INFORMATION IN AN APPEAL OF THE AGENCIES' FINAL DECISION.**

This Proposed Plan covers:

- Public Involvement Process p.2
- Site Background p.3
- Summary of Site Risks p.4
- Remedial Alternative p.5
- Glossary p.5

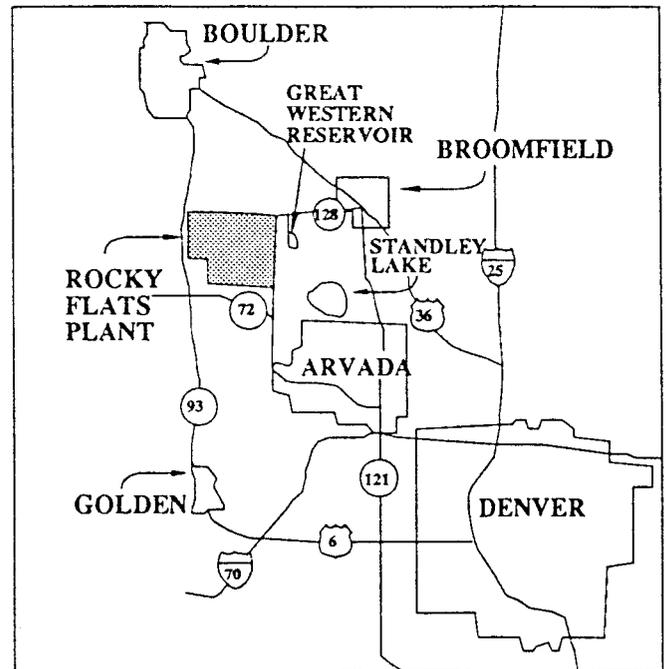


Figure 1
Rocky Flats Plant Site and Vicinity

SITE BACKGROUND

The Rocky Flats Plant (RFP) is located in northern Jefferson County, Colorado (Figure 1). RFP occupies approximately 6,550 acres of federal land and is a government-owned and contractor-operated facility that is part of the nationwide nuclear weapons production complex. RFP's primary mission has been to produce metal components of nuclear weapons from plutonium, uranium, and non-radioactive metals. Historical waste handling practices involved on-site storage, treatment, and disposal of hazardous and *mixed wastes*. Most plant structures are located within the primary RFP Site, which occupies approximately 400 acres. RFP is surrounded by a buffer zone of approximately 6,150 acres. Due to the complex nature of the RFP Site, it has been divided into sixteen Operable Units (OUs). The Low Priorities Site, OU 16, which consists of seven IHSSs, is the subject of this Proposed Plan.

The seven IHSSs comprising OU 16 include: IHSS 185 - Solvent Spill; IHSS 192 - Antifreeze Discharge; IHSS 193 - Steam Condensate Leak - 400 Area; IHSS 194 - Steam Condensate Leak - 700 Area; IHSS 195 - Nickel Carbonyl Disposal; IHSS 196 - Water Treatment Plant Backwash Pond; and IHSS 197 - Scrap Metal Sites - 500 Area. The following is a summary of the occurrences and operations of each hazardous site.

● **IHSS 185, Solvent Spill.** Four (4) gallons of *1,1,1 Trichloroethane (TCA)* leaked from a 55-gallon drum onto the southeast loading dock of Building 707 and a paved area adjacent to the loading dock on November 10, 1986. A commercial absorbent was used to clean up the spill at the time it occurred.

● **IHSS 192, Antifreeze Discharge.** A release of 155 gallons of antifreeze containing 25 percent ethylene glycol was diverted into Pond B-1. The drainage system was subsequently flushed with 5,000 gallons of water.

● **IHSS 193, Steam Condensate Leak - 400 Area.** A steam condensate line containing water with low level (0.135 milligrams per liter (mg/L)) *amines* was found to be leaking. The area where the leak occurred was a paved area at the time of the leak.

● **IHSS 194, Steam Condensate Leak - 700 Area.** A break in a steam condensate line containing a low level of *Tritium* occurred in the Building 707 area. The condensate had an approximate tritium activity of 1,000 pCi/L which is significantly lower than the stream standards of 20,000 pCi/L.

● **IHSS 195, Nickel Carbonyl Disposal.** From March through August 1972, cylinders of *Nickel Carbonyl* were disposed of into a dry well located in the buffer zone. They were opened inside the well and vented with small arms fire to allow decomposition in air.

● **IHSS 196, Water Treatment Plant Backwash Pond.** This pond was constructed in March 1955 to retain water for sampling purposes from the filter backwashing operations at the water treatment plant in Building 124. No records were found of the removal of the sludge, sediment, or soil associated with this pond.

● **IHSS 197, Scrap Metal Sites - 500 Area.** Scrap metal components, primarily from the original plant construction program, were buried in trenches in the central portion of the plant site, west of Building 559. Also, north of this site, scrap metal containing building construction debris from early plant construction was buried.

These IHSSs were grouped together because of the likelihood that previous remediation efforts and/or natural environmental processes at these low-priority sites have eliminated the need for any further remedial response action. Specific historical information for each OU 16 hazardous site is included in the Final "No Further Action Justification" Document.

SUMMARY OF SITE RISKS

The risks associated with the OU 16 IHSSs and the need for further action were assessed using a conceptual model to evaluate the exposure pathways by which contaminants could reach humans. The model is based on the physical setting, the operation, and the nature of hazardous substances. It describes the sources and types of contamination, environmental media (soil, ground water, etc.), contamination pathways, and the presence of humans (or other living organisms that may be affected). Past cleanup actions and natural processes that have affected the hazardous substances are described. A detailed discussion is presented in Section 3 of the Final "No Further Action Justification" Document.

An exposure pathway must have four parts to be complete: 1) A source of contamination, 2) A release of the contamination, 3) A route for the contamination to reach a human, and 4) A human (or other living organism) population that can be affected. If the exposure pathway is not complete, there is no risk to humans or the environment, and no further action is necessary.

A brief explanation of the conceptual model analysis performed for each IHSS is presented as follows:

- **IHSS 185, Solvent Spill.** The vapor pressure of TCA at 20°C is 13.2kPa (99mm Hg; Mackay and Shiu, 1981), and volatilization is rapid (U.S. EPA, 1979). Also, TCA was not detected in any of the eight groundwater samples collected between November 1989 and April 1992 at monitoring well P218089. The immediate clean up action taken of the TCA spill coupled with the high volatilization rate of TCA minimized or potentially eliminated the source of TCA contamination. Because the spill occurred in a paved area and the cleanup response action of the source was immediate, the wind dispersion and infiltration transport pathways are eliminated.

- **IHSS 192, Antifreeze Discharge.** The concentration of ethylene glycol has been diluted below detection limits by the 5,000 gallons of water that was flushed through the system immediately after the release and by surface water runoff for the past 12 years. Also, a degradation model of ethylene glycol showed less than 7 ppm (250,000 ppm in antifreeze) between 20 to 40 days after the contamination occurrence. Using this same reasoning, predicting that the ethylene glycol related to the 1979 spill is completely degraded by this time becomes possible.

- **IHSS 193, Steam Condensate Leak - 400 Area.** The area where the leak occurred was paved, eliminating the infiltration and wind dispersion pathways. The concentration of amines in the steam condensate (0.135 mg/L) was approximately 1½ percent of the permissible exposure limit (PEL) of 10 mg/L. Also, the concentration of amines has been diluted by rainfall over the 12 years since the spill occurred. Amines could not be detected; no source of contamination is present.

- **IHSS 194, Steam Condensate Leak - 700 Area.** The condensate had a Tritium activity of approximately 1,000 pCi/L which is significantly lower than the EPA set public drinking water standard of 20,000 pCi/L. Also, the released tritium has undergone one half-life decay since the occurrence of the release. This predicts a present-day maximum tritium activity of 500 pCi/L. This value is within the range of background activities reported for tritium in surface waters at RFP. Tritium associated with this IHSS does not represent an existing source of contamination.

- **IHSS 195, Nickel Carbonyl Disposal.** Nickel carbonyl is highly volatile and readily decomposes in the presence of oxygen forming nickel oxide. Nickel oxide is highly insoluble in groundwater. For every gram (0.002 pound) of nickel oxide in contact with typical groundwater, approximately 10 micrograms (ug) of nickel per liter of water is transferred to solution. EPA's reference dose for nickel in drinking water is 100 ug/L (U.S. EPA, 1990). Wind dispersion disseminated nickel oxide particles, which would not be detected at concentrations exceeding background.

- **IHSS 196, Water Treatment Plant Backwash Pond.** There exists no documentation or records indicating that materials in this backwash pond were ever removed. Also, none of the persons interviewed by Doty and Associates (1992) had any recollection of any materials ever being removed. Source of contamination may still be present at this site, and exposure pathways are potentially complete.

- **IHSS 197, Scrap Metal Sites - 500 Area.** Documentation indicates that excavation activities of the buried material were conducted in 1981. However, the extent of removal is unknown. Contamination may still be present at this site, and exposure pathways are potentially complete.

This conceptual model analysis demonstrated that exposure pathways are not complete for IHSSs 185, 192, 193, 194 and 195, because past response actions and/or natural attenuation processes eliminated the source or exposure pathways. Therefore, these hazardous sites currently present no risk to human health and the environment. Further investigation is warranted for IHSSs 196 and 197 due to the possibility that complete exposure pathways exist, because previous removal actions may not have eliminated the source and natural processes may not have prevented release and migration of contaminants. IHSSs 196 and 197 investigations are to be conducted under the scope of OU 5 and OU 13, respectively.

SUMMARY OF REMEDIAL ALTERNATIVE

The decision for a "No Action" alternative for IHSSs 185, 192, 193, 194, and 195 of OU 16, the Low Priority Sites, was based upon the *National Oil and Hazardous Substances Contingency Plan* which provides for the selection of a No Action alternative when a site or OU is already in a protective state. The Risk Assessment Analysis performed in the Final "No Further Action Justification" Document determined that these IHSSs are currently in a protective state and present no risk to human health and the environment.

Further investigation is warranted for IHSSs 196 and 197 to be conducted under the scopes of OU 5 and OU 13, respectively.

GLOSSARY

Amine: An alkyl derivative of ammonia. Amines are used as disinfectants especially to control infections of bacteria responsible for the rapid hydrolysis of urea.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund): A law passed in 1980 that establishes a program to identify abandoned hazardous waste sites, ensures that they are cleaned up, evaluates damages to natural resources, and creates claims procedures for parties who cleaned up the sites.

Exposure Pathway: A unique mechanism by which a population may be exposed to chemicals at or originating from the site.

Individual Hazardous Substance Site (IHSS): An area which is believed to be contaminated as a result of previous operations and disposal practices.

Mixed Waste: Waste that contains both hazardous waste and radioactive contaminants.

Nickel Carbonyl: Nickel tetracarbonyl, Ni(CO)₄; yellow volatile liquid. Very poisonous--vapors may cause irritation, congestion and edema of lungs. Prolonged exposure may cause cancer of lungs, nasal sinuses.

National Oil and Hazardous Substance Pollution Contingency Plan (NCP): Preamble that describes the CERCLA regulations.

Operable Unit (OU): A term used to describe a certain portion of a Superfund site. An operable unit may be established based on a particular type of contamination, contaminated media (e.g., soils, water), source of contamination, and/or geographical location.

Resource Conservation and Recovery Act (RCRA): Was designed in 1988 by the U.S. Congress to require the "cradle-to-grave" management of hazardous substances. The CDH, through the Hazardous Materials and Waste Management Division, implements RCRA in Colorado.

Record of Decision (ROD): A public document that documents and explains the clean up alternative(s) to be used at a Superfund site. The ROD is based on information from the Remedial Investigation and Feasibility Study, public comments, and community concerns.

Superfund Amendments and Reauthorization Act (SARA): Modifications to CERCLA enacted on October 17, 1986.

1,1,1 Trichloroethane: Commonly known as methylchloroform. It is a solvent that is often used in cold metal cleaning. Human toxicity: Irritating to eyes and mucous membranes.

Tritium: Natural occurring, low β -emitter, radioactive isotope of hydrogen. The half life of Tritium is equal to 12.26 years.

If you did not receive this Proposed Plan in the mail and would like to be included in the mailing list for future information, please mail this completed form to:

DOE's External Affairs Office
P.O. Box 928
Golden, CO 80402-0928

or

Jeffrey Swanson, Engineer
Colorado Department of Health/HMWMD-HWC-B2
4300 Cherry Creek Drive South
Denver, CO 80222-1530

Name _____

Address _____

Affiliation (if any) _____

Phone Number _____