

## RCRA PERMITTING OF MIXED WASTE FACILITIES AT THE ROCKY FLATS PLANT

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### ABSTRACT

On October 30, 1991, the Rocky Flats Plant was issued a Resource Conservation and Recovery Act (RCRA) Part B operating permit for the storage of low-level radioactive mixed waste. Issuance of the permit marks the end of several years of effort by the Colorado Department of Health (CDH), the Environmental Protection Agency (EPA) and the Rocky Flats Plant (RFP) in negotiating the regulation of mixed waste and in developing a permit application, draft permit, comments and a final operating permit. Although issuance of a Part B permit is significant, many issues related to mixed waste and mixed residue management must continue to be addressed.

### INTRODUCTION

The Rocky Flats Plant generates various waste forms including transuranic (TRU), low-level (LL), hazardous and sanitary waste. When hazardous waste is mixed with either TRU or LL waste, the resulting waste form is referred to as "mixed waste." Mixed and hazardous waste must be managed in accordance with the RCRA requirements for the accumulation, storage and treatment of hazardous waste.

### FACILITIES AT THE ROCKY FLATS PLANT

The Rocky Flats Plant generates both liquid and solid waste through limited production operations, maintenance and environmental management and restoration activities. The treatment and storage processes for these operations are described in more detail below.

#### Liquid Waste Storage and Treatment

Liquid process waste is generated throughout plantsite via utilities operations, laboratory analyses, environmental restoration, laundry and limited production operations. Much of this waste is considered either hazardous or mixed waste, however, at this time all aqueous process waste is treated in a single facility (see Fig. 1). Following generation, radioactive aqueous liquid waste is stored in holding tanks pending fingerprint analysis for treatment in on site facilities to remove radioactive contamination and convert the solids to a immobilized waste form for interim storage and eventual off site storage or disposal. The liquid effluent is re-used on site in plant utilities operations such as the steam plant and cooling towers. Because hazardous and mixed waste is treated in the liquid waste treatment facility, the resulting solids generated by this facility are considered hazardous or mixed waste.

Non-aqueous liquid waste (i.e., oils and spent solvents) are either immobilized in a separate onsite treatment facility in anticipation of future offsite disposal or are stored awaiting shipment to offsite facilities for treatment, disposal or reclamation.

#### Solid Waste Storage and Treatment

Some radioactive and radioactive mixed solid waste undergoes size reduction or is repackaged for more efficient utilization of storage space. The remainder, including hazardous waste, is packaged as generated and is stored on plantsite, with the intent to transport the waste offsite to a storage or disposal facility.

Non-radioactive hazardous waste is typically sent to commercial treatment, storage and disposal facilities (TSDFs), while LL mixed and TRU mixed waste will eventually be stored or disposed of at either the Nevada Test Site (LL mixed) or the Waste Isolation Pilot Plant in New Mexico (TRU mixed). Prior to shipment to these facilities, RFP is required to certify that any waste sent to these facilities meets stringent requirements including documentation verifying the contents of each waste package and meeting acceptance criteria for the waste.

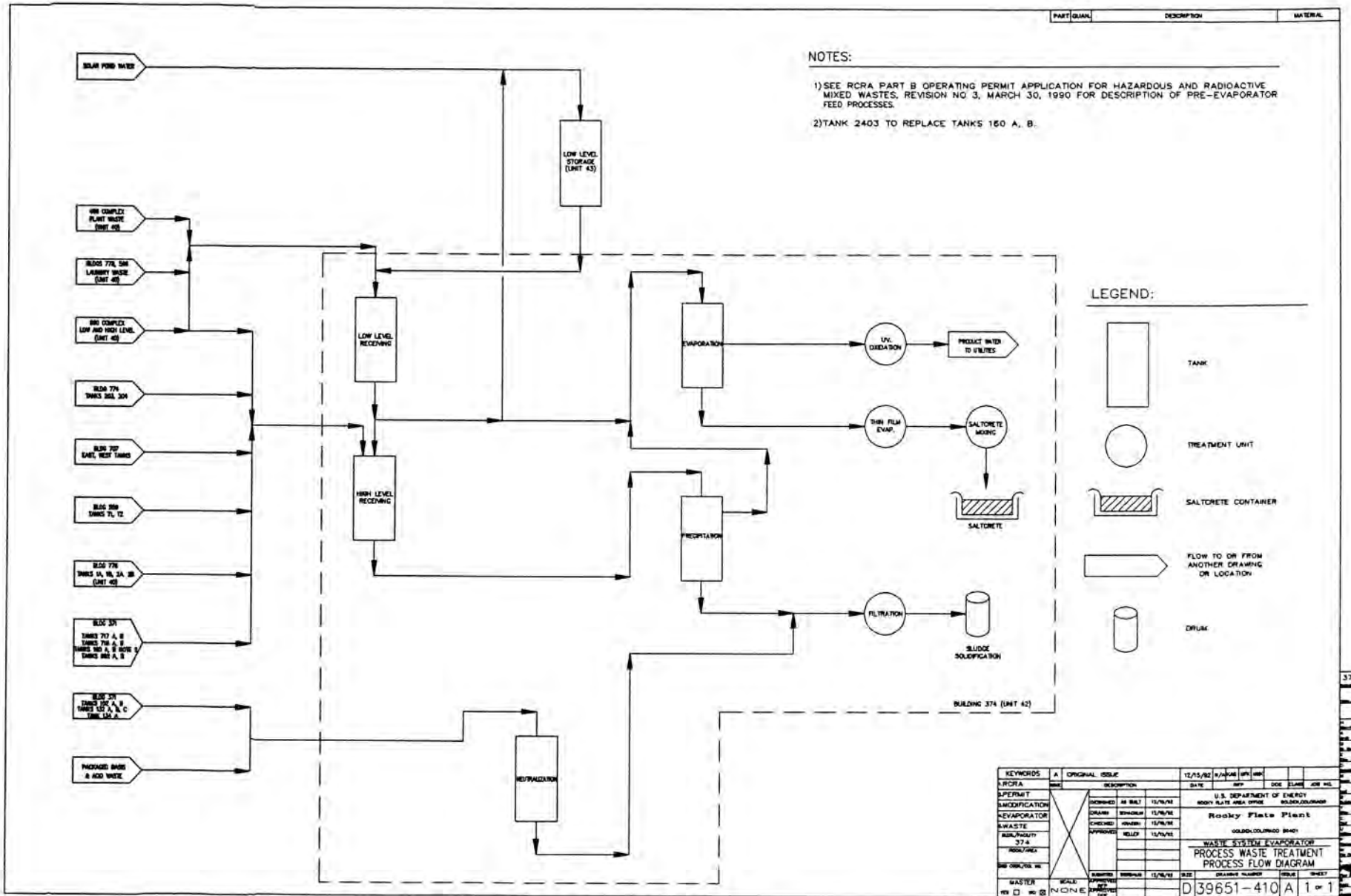
### RCRA REGULATORY HISTORY AT ROCKY FLATS

The Resource Conservation and Recovery Act (RCRA) was passed in 1976 and established the legal requirements around which the hazardous waste regulations were created. The initial RCRA regulations became effective in 1980, at which time RFP submitted information required in order to gain interim status. This information only included that related to hazardous waste activities and not mixed waste activities.

#### Hazardous and Mixed Waste Regulation

Following submittal of the initial Part A application in 1980, RFP was notified by the Environmental Protection Agency (EPA) in 1981 that radioactive mixed waste is regulated by RCRA. However, RFP and the U.S. Department of Energy (DOE) maintained that radioactive waste was regulated under the Atomic Energy Act of 1954, as amended, and therefore is exempt from regulation under RCRA. Subsequent negotiations between the EPA, the Colorado Department of Health (CDH) and DOE resulted in a compliance agreement for the regulation of low-level mixed waste. This compliance agreement required that RFP comply with the Colorado Hazardous Waste Regulations and submit a Part B permit application for hazardous and low level mixed waste by November 1986. The agreement also required documented characterization of all hazardous and low level mixed waste streams at RFP, site characterization and corrective action, and closure and post closure plans. This agreement and subsequent requirements excluded the regulation of TRU mixed waste.

In 1987, DOE interpreted that TRU mixed waste was also included within the coverage of RCRA. CDH subsequently requested that RFP submit a Part B permit application for TRU mixed waste by June 1988. Without this application, CDH threatened to terminate interim status for those affected TRU mixed waste units.



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"COMPUTER-GENERATED; NO MANUAL CHANGES ALLOWED"

Fig. 1. Process waste treatment process flow diagram.

In June 1989, CDH served RFP with a Compliance Order citing violations noted during previous CDH inspections. These violations included inadequate groundwater monitoring, storage without interim status and administrative deficiencies. As a result of the violations, CDH and RFP entered into a Settlement Agreement which committed to pay nearly \$100,000. The most significant fallout from the resulting Settlement Agreement was a limitation of TRU mixed waste storage to 1,601 cubic yards.

### Mixed Residue Regulation

In August 1989, CDH then issued a Notice of Violation (NOV) stating that recoverable residues are subject to RCRA regulation. These violations related to the processing of "residues" mixed with RCRA regulated hazardous constituents. "Residues" are defined as materials containing economically recoverable amounts of plutonium. Residues had historically been considered "product" by RFP, but the Notice of Violation (NOV) cited residues which were not "in process" and were therefore considered secondary materials. The NOV cited RFP for not submitting permit applications for mixed residues and not managing mixed residues in accordance with the Colorado Hazardous Waste Regulations, and directed RFP to achieve compliance. This NOV resulted in another Settlement Agreement Compliance Order which defined residues and outlined a series of deliverables geared towards characterizing and inventorying residues. This order was followed by the "Residue Compliance Order" in July 1991, which established dates for compliance for all mixed residues at RFP.

### Land Disposal Restricted Waste Regulation

The RFP generates and stores significant quantities of mixed waste which is restricted from land disposal (LDR). Technically, these wastes cannot continue to be generated if technologies are not available to adequately treat the waste to allow it to be land disposed. The lack of treatment technologies is primarily due to the complications associated with the radioactive portion of the waste forms and the lack of commercial or federal capabilities to treat these wastes to meet the LDR treatment standards.

In September 1989, EPA, CDH and RFP entered into the Federal Facilities Compliance Agreement (FFCA). The FFCA requires that RFP take appropriate actions to identify, safely store and minimize the generation of LDR waste. Additionally, the FFCA calls for plans to treat LDR waste such that it will meet LDR standards. These plans include schedules for performing laboratory tests, pilot scale tests and full scale production.

### Part B Permit

On September 30, 1991, CDH issued the hazardous and low-level mixed waste Part B permit. The permit was effective on October 30, 1991 and regulates 9 hazardous and low-level mixed waste container storage units. The permit includes compliance schedules for various portions of the permit and incorporates environmental restoration work schedules into the permit. The permit has since been modified nine times to include the addition of 6 hazardous, low-level mixed waste, transuranic mixed waste and mixed residue container storage units to the permit. Included in these modifications is a modification to the personnel training requirements to provide basic training to all personnel, more specialized training to

those personnel involved in hazardous and mixed waste operations, and detailed classroom and on-the-job training for personnel responsible for inspecting and maintaining hazardous and mixed waste units.

Permit modification requests have been previously submitted for low level mixed waste tank storage and treatment units and TRU mixed waste container and tank storage and treatment units. CDH has taken a phased approach in permitting units at RFP. The first phase included hazardous and low level mixed waste container units only. Subsequent modifications to the permit will include distinct portions of RFP in a sequential manner.

### Mixed Residue Permit Modification

As stated previously, residues are defined as materials containing economically recoverable amounts of plutonium. Therefore, mixed residues are residues which exhibit a hazardous waste characteristic or residues contaminated with listed hazardous constituents. Since residues had historically been considered "product" by RFP, little consideration was given to the hazardous portion of the materials.

A lawsuit filed by the Sierra Club resulted in a U.S. District Court Order which mandated that RFP obtain a Part B permit for mixed residues by August 1993. If this permit is not obtained, then the Court requires that hazardous and mixed waste generation processes cease. The mixed residue permit application was submitted to CDH in June 1992. A public meeting was held which resulted in minor comments and questions and the application is awaiting CDH review and issuance in the form of a draft permit.

The mixed residue permit modification addresses tank and container storage and treatment of mixed residues in over 200 units throughout the RFP as required by the Residue Compliance Order. Also required are closure plans for all of the mixed residue units. These closure plans are to be submitted in a phased manner.

### **NOTICE OF VIOLATION**

On June 17, 1992, CDH issued a Notice of Violation (NOV) to EG&G Rocky Flats, Inc. The NOV was based on findings by CDH that RFP allegedly violated the Colorado Hazardous Waste Act and the Colorado Hazardous Waste Regulations.

In response to the NOV, RFP initiated a ten point corrective action plan for programmatic deficiencies. The ten areas consist of the following:

- Expedite RCRA training and ensure that all personnel requiring RCRA training receive such training in a timely manner. This training consists of specific classroom training followed by on-the-job training specific to the workplace of the trainee.
- Identify methods to prioritize environmental compliance projects.
- Improve project management for environmental compliance awareness and utilize a plantwide action tracking system. This tracking system will be used to identify projects and track their progress through completion.
- Increase accountability and identify responsibility for environmental compliance issues.
- Expedite a system to ensure that environmental deficiencies are corrected promptly.

- Expedite the waste characterization program. This involves improving laboratory analytical capabilities and sample turnaround times. This also includes investigating increased use of off site laboratories.
- Implement a hazardous waste tank assessment and compliance program to determine the condition of all hazardous waste tank systems (including the condition of secondary containment and characterization of tank contents).
- Improve Contingency Plan reporting.
- More effectively track environmental compliance actions from identification through completion.
- Improve line management involvement in CDH/EPA inspections of hazardous waste facilities.

Implementation of these actions will help to improve hazardous and mixed waste activities at RFP. Additionally, given the new mission of RFP of transition from a weapons production facility to an environmental and waste manage-

ment facility, greater emphasis will be placed on the closure of active RCRA units and reducing the number of areas subject to hazardous waste regulation.

#### REFERENCES

1. STATE RCRA PERMIT, 1991, Issued to the U.S. D.O.E. Rocky Flats Plant by the Colorado Department of Health, Denver, Colorado.
2. SETTLEMENT AGREEMENT AND COMPLIANCE ORDER ON CONSENT, NO. 89-10-30-01, 1989, Issued to the U.S. D.O.E. Rocky Flats Plant by the Colorado Department of Health, Denver, Colorado.
3. COMPLIANCE ORDER NO. 91-07-31-01, 1991, Issued to the U.S. D.O.E. Rocky Flats Plant by the Colorado Department of Health, Denver, Colorado.
4. MIXED RESIDUES COMPLIANCE PLAN, 1990, U.S. D.O.E. Rocky Flats Plant, Golden, Colorado.