LESIONS LEARNED FROM THE DEVELOPMENT AND SUBMITTAL OF AN APPLICATION FOR RISK BASED STORAGE OF PCBS TO THE ENVIRONMENTAL PROTECTION AGENCY REGION 10

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ABSTRACT

The Environmental Protection Agency (EPA) promulgated federal regulations in 40 Code of Federal Regulations (CFR) 761.61(c) that allowed for risk based storage of PCB remediation waste. Those regulations state that any person wishing to store PCB remediation waste in a manner other than prescribed by regulation must apply in writing to the EPA Regional Administrator in the region where the site is located.

The Idaho National Engineering and Environmental Laboratory (INEEL) submitted an application for the storage of PCBs based on risk to EPA Region 10. The INEEL stores mixed transuranic waste that does not fully meet the Toxic Substance Control Act Storage Area requirements. Quantitative and qualitative risk assessments were performed in the application. Lessons learned from the negotiations with EPA on the acceptance of the application will be displayed as a poster presentation.

INTRODUCTION

The Environmental Protection Agency (EPA) promulgated federal regulations in 40 Code of Federal Regulations (CFR) 761.61(c) effective on August 28, 1998, that allowed for risk-based storage of PCB remediation waste. Those regulations state that any person wishing to store PCB remediation waste in a manner other than prescribed in 40 CFR 761.65, must apply in writing to the EPA Regional Administrator in the region where the site is located. The regulations further state that EPA will issue a written decision on each application for a risk-based storage method for PCB remediation wastes. EPA will approve such an application if it finds that the method will not pose an unreasonable risk of injury to health or the environment. The following information constitutes the lessons learned from the preparation of a risk-based application for the continued storage of PCB remediation waste at the Idaho National Engineering and Environmental Laboratory (INEEL) Radioactive Waste Management Complex (RWMC) Transuranic Storage Area – Retrieval Enclosure (TSA-RE). This continued storage will be less 18 years since the site is subject to a Spent Nuclear Fuel Settlement Agreement between the Department of Energy and the State of Idaho which requires treatment and removal of all these wastes by December 31, 2018.

The purpose of the original application was to provide necessary information to the Environmental Protection Agency to gain Agency concurrence for the risk-based storage of PCB remediation wastes as allowed under 40 CFR 761.61c. An analysis was provided to EPA on the PCB hazards present at the RWMC TSA-RE; the various controls: natural, engineered and administrative that are in place to manage these hazards and minimize any potential risks; and the monitoring and surveillance activities that assure the aforementioned actions are indeed protective of the environment and the public and the worker. The original application also provided a quantitative evaluation of the potential risks to demonstrate confidence in the safety of the storage configuration. The objective of the application was to provide the necessary information to enable the EPA to decide that the present storage configuration with associated
controls in place does not and will not pose an unreasonable risk of injury to human health or the environment.

The application covered only the interim storage of polychlorinated biphenyls (PCBs). It did not address the risks associated with the planned retrieval and treatment. The assessment also included a quantitative evaluation of potential impacts using very conservative and bounding assumptions. The results confirm that there will be no adverse effects to human health or the environment. Collectively, this qualitative and quantitative evaluation should provide the necessary information to enable the Environmental Protection Agency (EPA) to decide that the present storage configuration with associated controls in place does not and will not pose an unreasonable risk of injury to health or the environment.

**HISTORY OF SITE ACTIVITY**

Since 1970, transuranic (TRU) waste, as defined in DOE Order 5820.2A, *Radioactive Waste Management*, has been placed in retrievable storage at the RWMC under the premise that the waste will be retrieved and transported to a permanent repository. The TSA is an area within the RWMC, an operating waste management facility. The RWMC covers approximately 0.6 km² (144 acres) located near the southwest corner of the INEEL. Since 1970, contact-handled transuranic (CH-TRU) waste has been stored in containers on ground level asphalt pads within the TSA. This waste was primarily generated by operations conducted for DOE and its predecessors in support of defense programs. CH TRU is defined as containing > 100nCi/g of alpha emitting TRU radionuclides with a half life of > 20 years and having a container surface radiation level of ≤ 200 mR/hr.

The waste is located on three adjacent storage pads. On two of the asphalt pads (TSA-1 and TSA-2), the waste was placed in an assortment of containers that were stacked neatly and covered with a plywood cover, fabric and 0.9 to 1.2 m (3 to 4 feet) of soil. On the third pad (TSA-R) the waste containers were neatly stacked and some were covered with fabric only. The pads are divided into 14 sections referred to as cells.

The TSA-1/TSA-R waste pad storage appears as a mound of soil approximately 6.1 m (20 feet) high, 235 m (770 feet) long, relatively flat across the top for 46 m (150 feet), then sloping down to grade to the west at a 1 to 1 slope and to a shoring wall on the east at a height of 0.9 to 3.0 m (3 to 10 feet). The adjacent TSA-2 pad storage is 6.1m (20 feet) high, 74.4 m (244 feet) long by 45.7 m (150 feet) wide and merges at the top with the east side of the TSA-1 mound. The waste containers on TSA-1 and TSA-2 consist primarily of 208 liter (55-gallon) drums and fiberglass reinforced plywood (FRP) boxes. These containers are stacked approximately 4.9 m (16 feet) high and covered with plywood sheeting, plastic tarp, and 0.9 to 1.2 m (3 to 4 feet) of soil. The waste containers on the TSA-R consist principally of 208 l (55-gallon) drums and FRP boxes, and metal bins. TSA-R Cell #1 is a unique configuration in that it contains 208 cargo containers stacked two high and loaded with 208 l (55-gallon) drums. Metal bins stacked two high form the perimeter of this cell. Also, Cell #1 is the only cell on TSA-R covered with soil; Cells #2 and #3 are covered only with a vinyl-coated geo-fabric tarp. The entire waste storage is divided into 14 cells, which are 45.7 m (150 feet) wide by 12 to 46 m (40 to 150 feet) long. Firebreaks, walls consisting of a meter or two (several feet) of soil, isolate each cell. TSA-1, TSA-2, and TSA-R contain waste placed on the storage pads from time frames 1970-1975, 1975-1980 and 1975 to approximately 1989 respectively.

In 1996, the retrieval enclosure (RE), an engineered metal building, approximately 29,100 m² (313,000 ft²) was constructed over the pads. The nominal size of the enclosure that extends
over the TSA-R and TSA-1 pad areas is 61 m (200 ft) wide x 358 m (1,175 ft) long, with an
average ceiling height of 9.1 to 10.7 m (30 to 35 ft). An adjacent 56 x 130 m (184 x 425 ft) annex
extends over the TSA-2 pad.

LESSONS LEARNED

The preparation, review, and negotiation of the application with EPA for the risk based
storage of PCBs are presented as lessons learned in this document.

Department of Energy Sites

Cleanup of DOE sites is complicated. Each DOE site has a unique set of conditions that
developed over the cold war years. Different sites may require different actions by EPA in order
to comply with complex regulations. Risk based approval may be the only option for some DOE
facilities. The PCB regulations allowed a risk based approach when a facility is not able to
comply with the one or more of the standard PCB regulations. DOE facilities have many special
cases, one of kind situations.

Exposure Scenarios

Initially, based on the worker/visitor exposure scenario, the only exposure pathways
evaluated were incidental soil ingestion and inhalation. Calculations for inhalation were not
performed in the first submission of the application for lack of an established slope factor. EPA
gave guidance that the same slope factor for ingestion could be used for inhalation. EPA also
requested dermal exposure be evaluated.

Although not part of any exposure scenario, a groundwater pathway was evaluated
against the data quality objectives. The initial application included a groundwater scenario based
on the presence of a building over the PCB contaminated waste. EPA requested a more
conservative scenario. EPA requested that calculations be performed assuming no building was
present to protect the waste from precipitation.

EPA Regions

Expect differences in requirements between EPA Regions. Each EPA Region is
somewhat antonymous within itself. Each EPA Region retains its own authority, however, the
Regions generally accept guidance from EPA Headquarters. A qualitative risk assessment in one
EPA Region may suffice while another EPA Region may require a minimum quantitative
screening level risk assessment with multiple exposure scenarios. The complexity of the storage
scenario will also determine the complexity of the application. If the applicant is requesting risk
based storage for longer than one year, the applicant should anticipate an EPA request for a
quantitative risk assessment. EPA Region 4 has approved a qualitative risk based application
from the Savannah River Site for the storage of radioactively contaminated PCBs for a short 45
day duration prior to disposal.

Time Frame

Anticipate regulators concerns in the application. By thoroughly reviewing your
application prior to submittal, a number of concerns and/or omissions can be corrected.
Submission of a well prepared document will greatly speed up EPA’s review process. Pay careful
attention to language in draft documents; read each word and determine what it means to your
operation and try to anticipate the meaning to the regulators. Allow plenty of time for EPA to consider your application. A minimum of six months is needed for EPA review and approval. Preparation of the application and the incorporation of EPA comments took our facility an additional six months.

**Relationship with the Regulator**

Develop a positive relationship with the regulator. Numerous problems can be overcome through open discussions. Problems can be corrected verbally that might otherwise take much longer if written exchanges are required. Sending portions of the application to the agency as a draft and requesting comments prior to formally submitting the document can greatly speed up the review process.

**CONCLUSION**

The Environmental Protection Agency has given the regulated community a path to compliance by including a risk based option for storage and disposal of PCBs. Department of Energy facilities have a unique set of conditions that developed over the cold war years with many special cases and one of a kind situations. Different sites often require different actions by EPA in order to comply with the TSCA regulations. Risk based approval may be only option for some DOE facilities. While the application and approval process may take longer than a facility might hope, the risk based approach offers an attractive alternative to a consent order/compliance agreement.

**REFERENCES**


ASSESSMENT OF RISKS ASSOCIATED WITH THE PCB DISPOSAL AMENDMENTS


DOE/ID-10389, Revision 6, January 1994 “Track 2 Sites: Guidance for Assessing Low Probability Hazard Sites at the INEL”

EDF ENV-003 dated 2/5/90 “Hazardous Stored TRU Waste Source Term for the RWMC’s TSA”


