

U. S. NUCLEAR REGULATORY COMMISSION.

REGION III

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Report No: 040-07604/97003(DNMS)

Licensee: B. P. Chemicals

Location: Lima, Ohio

Dates: November 12-13, 1997  
December 23, 1997

Inspector: E. L. Kulzer, Radiation Specialist

Approved By: Bruce L. Jorgensen, Chief  
Decommissioning Branch

**EXECUTIVE SUMMARY**  
**B. P. CHEMICALS REMEDIATION PROJECT**  
**LIMA, OHIO**  
**NRC Inspection Report 04G-07604/97003(DNMS)**

This was a routine safety inspection conducted on November 12-13, 1997. The inspection emphasized independent observation of waste processing, implementation of license conditions, laboratory practices, and sample processing activities.

The processing operation had been modified somewhat from what was previously observed. Additional changes were being made at the time of this inspection. These changes included the removal of the power screen and conveyor, and the elimination of the soil holding area. The inspector observed that the activities were being conducted in accordance with revised radiological procedures on both work shifts. The process, which had been modified somewhat from the original, was in agreement with established procedures, and the waste survey units could be correctly related to their location in the closure cell.

Archived soil samples were collected to compare the contractor laboratory results with the analytical results obtained from the NRC Region III Laboratory. The accuracy was confirmed by the results obtained from the NRC Region III Laboratory on the archived samples collected. Two water samples from the deep well injection process were collected from the holding tank and sent to the Oak Ridge Institute for Science and Education (ORISE) for analysis. The results of the two water samples collected will be reported later in a separate letter.

## DETAILS

### 1.0 Background

B. P. Chemicals currently owns and operates the Chemical Production Facility in Lima, Ohio. This site contains facilities and areas contaminated by the former production and utilization of catalyst material containing depleted uranium. In October 1989, the licensee conducted a site characterization and submitted a Decommissioning Plan in August 1990. Remediation of the facility began in June 1991, and is continuing. In December 1991, phase one in the remediation of four ponds containing depleted-uranium-contaminated sludge was initiated. In 1993, the licensee removed the mixed waste sludge and contaminated soil from the V-1 pond. The sludge was added to another pond and the soil stockpiled until the pond closure plan was approved. B. P. Chemicals tested the stabilization process at the pilot plant stage for each of the North and South Deepwell Ponds and for the Burn Pond. Waste processing is complete except for Burn Pond waste, for which processing was in progress at the time of the inspection. The current contractor is Severson Environmental, Inc.

### 2.0 Laboratory Activities

#### 2.1 Scope

The inspectors reviewed records and data concerning the outside laboratory (Quantera), archived samples, sample collection, chain of custody, and analytical results for all of the batches that had been analyzed up to the time of the inspection. The NRC inspector selected 20 archived samples which were provided to the NRC Region III Laboratory for analysis. The results from the outside laboratory (Quantera) were also compared to the onsite contractor results (Severson).

#### 2.2 Observations and Findings

The NRC inspector reviewed the laboratory equipment and determined that it was calibrated and functioning properly. The NRC inspector reviewed the calculations made to determine the comparison averages of depleted uranium (DU) made for each survey unit. This procedure follows NUREG-5849, Section 8.5.5. Some totals of nine survey units were chosen and calculations were made to determine the comparison average concentration of DU for each survey unit. The survey units selected were the Burn Pond Nos. 1, 20, 29, and 41 and the North Deepwell Pond Nos. 16, 18, 29, 43, and 50. All calculations were in agreement with the contractor, and all showed compliance to the average concentration limit of 300 picocuries per gram (pCi/g).

Sample collection activities were documented in accordance with requirements found in the revised Sections 2 and 9 of the Quality Control/Quality Assurance (QA/QC) Plan.

Analytical data from the water being transferred from the ponds to the deepwell injection system was reviewed and found to be within license conditions. One sample from August 19, 1997, was measured at 29 picocuries per liter (pCi/l) which was close to the 30 pCi/l license condition. Two water samples were collected at the holding tank where it is held prior to being injected into the deepwell injection system. These samples will be analyzed, and the results reported at a later date.



The required six samples out of the 10 samples collected per survey unit were being analyzed as required in the revised procedure BP-A-30 dated October 7, 1997. The samples were properly labeled, archived, and stored in the archive storage room.

A comparison was made of the results of the analysis of the soil samples by the NRC Region III Laboratory and the Severson Laboratory as shown in Table I, attached.

The results of the laboratory results the analyses and evaluations were submitted to the Project Manager and Certifying Engineer and will be part of the final report submitted to NRC.

## 2.3 Conclusions

The licensee's analytical results for stabilized sludge were confirmed to be accurate, and the use of the proper calculational techniques to determine average concentration was confirmed.

## 3.0 Environmental monitoring

### 3.1 Scope

Environmental and personal air sampling data were reviewed for the Mixed Waste Pond Closure Project.

### 3.2 Observations and Findings

Continuous and occupational monitoring data from September 15, 1997 to the time of the inspection were reviewed. The occupational air sample results were found to be below  $1.0\text{E-}11$   $\mu\text{Ci/ml}$  (50 percent of the 10 CFR 20, Appendix B, Table 1, Column 3, Air concentration limits). A review of the air monitoring data indicated that radiation doses to the public were maintained below regulatory limits.

The continuous air sampling that was conducted at the work zone perimeter was found to be less than the 10 CFR 20, Appendix B, Table 2, Column 1, air concentration of  $6.0\text{E-}14$   $\mu\text{Ci/ml}$ .

### 3.3 Conclusions

The air sampling program met the requirements and the results showed that the air concentrations of radioactive material met the applicable limits.

## 4.0 Training

### 4.1 Scope

The training records for the contractor (Severson) were reviewed to determine if the contractor had been trained regarding procedure revisions.

### 4.2 Observations and Findings

Individual training packages had been prepared covering the revised Section 11 procedures. These were reviewed for each of the key contractor (Severson) workers, which included the laboratory supervisor, laboratory technicians, quality manager, and project manager. No discrepancies were identified in the review.

#### 4.3 Conclusions

The contract workers were properly trained in the revised QA/QC procedures and the training was documented before work resumed following suspension of activities to address procedure and other problems.

#### 5.0 Records Review

##### 5.1 Scope

The analytical results from all waste ponds were reviewed to ensure that the processing met the stabilization criteria proposed in the decommissioning plan, and the records and methods of recording survey unit/cell location were reviewed.

##### 5.2 Observations and Findings

A review of the stabilization data from the pilot tests submitted for each of the ponds indicates that the process used met the criteria proposed in the decommissioning plan. The analytical records from all survey units processed were reviewed. No results were recorded over the 300 pCi/g action level. The laboratory supervisor instructed laboratory technicians to notify him, at work or at home, if any results came in more than 250 pCi/g. This never occurred.

Contractor records were also reviewed and observations were made to ensure that each survey unit of sludge was documented as to its location in the cell. The contractor had a surveyor at the cell and kept in telephone communication with the Quality Manager who recorded each survey unit number and its cell location in the logs. These logs were reviewed and found to be complete.

##### 5.3 Conclusions

All survey units and locations were properly documented and survey units can be relocated if required. All laboratory results were within limits and were in general agreement with NRC results.

#### 6.0 Waste Processing Observations

##### 6.1 Scope

This inspection included observations of the waste processing operation during the day and evening work shifts as related to the revised Procedure BP-A-30 dated October 7, 1997. This was a review of licensee and contractor activities to implement specific portions of the QA/QC Plan.

##### 6.2 Observations and Findings

The processing of the waste was observed to be conducted in accordance with the revised Procedure, BP-A-30, dated October 7, 1997. All survey units were equal to or less than 100 cubic meters. The soil-like sludge was sampled, analyzed and calculated in accordance with Section 11.2.12.2 titled the Procedure for Verification of Attainment of the Option 2 Criterion for Stabilized Radioactivity Levels.

The waste treatment process had been modified slightly from what had previously taken place. The pug mill that was originally used during most of the processing had broken



down; it was replaced with a new pug mill. The power screen and conveyor which were used to deliver the sludge to the pug mill were taken out of service and the sludge was being delivered directly to the pug mill with a backhoe.

Entry into the area had to be made directly in the path of the backhoe, which was potentially dangerous. When the inspector pointed out the danger, the entrance/exit was modified to correct this situation.

The transportation of the sludge to the processing area was observed and found to be in compliance with safety and health regulations. All vehicles were functioning properly with headlights and wind shield wipers and backup alarms which would allow them to operate during nights and periods of bad weather.

The sludge holding areas previously consisted of three holding bins which held the sludge until the laboratory results were confirmed. These bins had been removed. The sludge was being sent directly to the cell where it was placed in three piles until the laboratory results were reviewed.

Sample collection and analysis were also observed during both shifts of operation. The samples were placed in proper containers, labeled with the survey unit number and date, and delivered to the laboratory for analysis. The sample collector was in telephone communication with the Quality Manager.

### 6.3 Conclusions

The field observations confirmed that the revised QA/QC procedures were being followed and that the survey units could be retrieved if the analytical results indicated elevated levels of depleted uranium.

### 7.0 Exit Meeting (IP 87104)

At the conclusion of the onsite inspection on November 12-13, 1997, the preliminary results of the inspection were discussed with the individuals identified below. The licensee appeared to understand the issues raised by the inspector and stated that actions had been or would be taken to address the concerns.

#### LIST OF PERSONS CONTACTED AT EXIT MEETING

W. Rupert, B. P. Chemicals, Environmental Engineer  
L. Vonderembse, B. P. Chemicals, Project Manager

Attended onsite exit meeting conducted November 13, 1997.

#### INSPECTION PROCEDURES USED

IP 83822: Radiation Protection  
IP 87104: Decommissioning Inspection For Materials Licensees

#### DOCUMENTS USED

B. P. Chemicals, Health and Safety Plan, Revision 2, August 1995

Appendix E, Project Quality Assurance/Quality Control

Section 11, B. P. Chemicals, QA/QC Plan, "Appendix E, Project Quality Assurance/Quality Control Plan"

Training Acknowledgment Form Severson Environmental Services for BP-A-30

Severson Environmental Services, Procedure for Implementing Project QA/QC Plan,

BP-A-30, dated October 7, 1997

BPCI, TRAINING PACKAGE, dated October 1, 1997

Attachment:   Table I                   Comparison of analytical Results

TABLE I  
Comparison of Analytical Results

Survey Unit No.	Sevenson Analytical Results	NRC RIII Analytical Results
BP 88-7	95.6 +/- 3.2	101+/-5.7
BP 75-3	not sampled	186+/-10.0
BP 62-2	226.2 +/-65.1	179+/-9.6
BP 90-1	125.9 +/- 9.3	114+/-10.1
BP 24-7	204.5 +/-57.5	159+/-15.4
BP 30-7	208.5 +/-58.1	241.4+/-27.9
BP 23-7	214.1 +/-60.5	198.6+/-26.3
BP 29-2	249.9 +/-70	287.7+/-35.2
BP 69-8	205.9 +/-59	182+/-22
BP 80-4	108.5 +/- 10.0	117.3+/-17.3
NDWP 13-5	120.1 +/-13.9	149.8+/-23.8
NDWP 38-3	121.2 +/-14.6	131.0+/-18.2
NDWP 4-5	99.8 +/-11.5	77.7+/-30.9
NDWP 22-3	104.6 +/-12.5	127+/-18
NDWP 16-5	110.6 +/-12.7	127+/-18.5
SDWP 3-5	25.6 +/-2.8	< MDA
SDWP 8-3	14.7 +/-2.0	< MDA
SDWP 28-9	15.3 +/-2.4	< MDA
SDWP 29-3	14.7 +/-2.2	< MDA
SDWP 13-5	21.1 +/-2.7	< MDA

MDA = 50 pCi/g