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Final Draft Copy No. 06

RCRA Interim Status Assessment
Part A Facilities
B Plant Facility

J-1866-33.08

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Final Draft *Copy No.*

RCRA Interim Status Assessment
Part A Facilities
B Plant Facility

Prepared for
Westinghouse Hanford Company

February 3, 1989
J-1866-33.08

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J-1866-33.08

February 3, 1989

Westinghouse Hanford Company
Post Office Box 1970
Richland, Washington 99352

Attn: Mr. David Hutchison

Re: RCRA Interim Status Assessment
Part A TSD Facilities
B Plant Facility

Dear Mr. Hutchison:

Our report on the RCRA Part A TSD Facility Assessment for the B Plant facility is enclosed. The report presents our understanding of the current compliance status of the facility, as well as recommendations for improving compliance with the applicable federal and state dangerous waste treatment, storage, and disposal (TSD) regulations. The report also presents regulatory guidance for each of the specific sections of dangerous waste regulations against which the facility was assessed.

The Part A permit application lists all units at B Plant as TSD units. The assessment was limited to the facility and practices directly associated with currently active TSD units identified as a result of this assessment. It does not include inactive units associated with the proposed NCAW process. In addition, waste piles are excluded from this assessment per our agreement.

The facilities and practices were assessed relative to the interim status TSD requirements noted specifically in the report. The facilities and practices were not assessed relative to dangerous waste generator or generator accumulation requirements. A comprehensive regulatory analysis of the facility was not performed.

The conclusions and recommendations in this report are based on information provided to the authors from several sources. Since it was beyond the scope of this project to independently confirm all information provided, there exists the possibility that portions of

the information are incorrect, incomplete, or out of date. For example, although a facility operating manual may state that a certain practice is accomplished, we did not actually observe the facility operations to confirm that the specific practice is performed.

Our conclusions and recommendations are based on our understanding and experience with the federal and state dangerous waste regulations. The conclusions and recommendations should not be construed as legal opinions. Consult legal counsel for more definitive compliance conclusions.

Sincerely,

HART CROWSER, Inc.

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Enclosure

J-1866-33.08

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GENERAL REQUIREMENTS FOR DANGEROUS WASTE MANAGEMENT FACILITIES
WAC 173-303-280

REGULATIONS AND REQUIREMENTS

General Requirements

The general requirements for dangerous waste TSD facilities note two specific requirements.

- The facility must be operated in a manner which does not present an imminent or substantial hazard to the public health or the environment.

- The facility is required to apply for an EPA/state identification number from the regulatory agency.

The requirement to operate the facility in a manner which does not threaten human health or the environment is purposely general so that the agencies can use the requirement as a broad, enforcement tool. If other, more specific regulations can not be applied to a situation where the agency feels a threat exists, this general facility requirement can be used. This requirement is satisfied primarily by preventing or minimizing activities on the site which have a potential to expose the public or the environment to dangerous wastes.

Identification Number

The TSD facility EPA/state identification number is obtained by completing a Washington State notification of dangerous waste activities form, Form No. 2, and submitting the form to the Washington State Department of Ecology. The information requested on the form includes:

- Name and address of the party handling the dangerous waste;

- The type of dangerous waste activities;
- Facility contact persons at the facility;
- Identification of the dangerous wastes handled at the facility; and
- The estimated quantity of dangerous wastes handled.

The identification number is used on the annual reports that a TSD facility must submit each year and on manifests which a facility may use to transfer wastes off-site.

APPLICABILITY

All of B Plant's tanks to be used for the future NCAW process have been identified as TSD units in the Part A permit application. Thus, the B Plant facility must satisfy the general requirements for dangerous waste management facilities. B Plant is not scheduled to begin the NCAW process until 1990, and the only TSD units that are presently active are as follows (Note: Waste piles have been excluded from this assessment per agreement with WHC):

- Storage of NCAW waste (corrosive, toxic, and EP Toxic) in tanks 6-2, 8-1, 8-2, 13-1, 39-2, and 39-5;
- Storage of used organic solvents (toxic) in tanks 26-1, 27-3, 27-4, 28-3, 28-4, 29-4, and 30-3;
- Potential treatment of spilled NCAW waste in tanks 24-1, 25-1, 25-2, and E-23-3 concentrator; and
- Container storage in Cell 4 (toxic, ignitible, EP Toxic).

Per agreement with WHC personnel, this assessment will only address the units listed above that are currently storing waste and the E-23-3 concentrator system which may be used to reduce the volume in the event of a spill of NCAW waste. These active units, and the potentially active E-23-3 concentrator system, must comply with the interim status dangerous waste management facility requirements.

INFORMATION REVIEWED AND CURRENT STATUS

The current status of the general dangerous waste management practices at the B Plant facility was assessed through interviews with facility personnel, a tour of the facility, and a review of various drawings and documentation provided by WHC. Currently, the only TSD activities occurring in the B Plant facility are those identified and described above. Other units were identified in the Part A permit application but are not being addressed in this assessment because they are not currently operating and have not operated as TSD units since the effective date of the regulations.

The Hanford Site is considered a single site and has received a single EPA/State Identification number.

CONCLUSIONS AND RECOMMENDATIONS

- (Regulations and Requirements) Other than the specific deficiencies identified in the following sections, the currently active TSD units at B Plant, specific to this assessment, are operated in a manner that pose no imminent or substantial threat to the environment.

REQUIRED NOTICES
WAC 173-303-290

REGULATIONS AND REQUIREMENTS

There are three specific types of notices required of TSD dangerous waste facilities.

- The Washington State Department of Ecology must be notified at least four weeks prior to the TSD facility receiving dangerous waste from a source outside of the United States.

- The owner/operator of the TSD facility is required to notify any new owner/operator of the dangerous waste regulations, chapter 173-303 WAC.

- The TSD facility owner/operator must inform any generator of dangerous waste who ships its waste to the TSD facility that the facility has the appropriate permits to receive the wastes.

Since most of the Hanford Site does not receive wastes from off-site, the required notices requirements generally do not apply to the Hanford facilities. The facility would be required to notify any new Hanford Site operator of the applicable dangerous waste regulations if, in the future, the site operations are assumed by someone other than WHC.

APPLICABILITY

The B Plant facility does not receive dangerous waste from off-site. Nor does the facility ship dangerous wastes off-site. Thus, the notification requirements are not applicable to the B Plant facility.

GENERAL WASTE ANALYSIS
WAC 173-303-300

REGULATIONS AND REQUIREMENTS

Waste Analysis Requirements

The waste analysis requirements assures that the TSD facility has sufficient understanding of the dangerous wastes to properly treat, store, or dispose of them. The waste analysis requirements include the following:

- The owner/operator must obtain a detailed chemical, physical, and/or biological analysis of the wastes prior to its management. The analysis must provide the parameters necessary to assure that the material is properly handled. An understanding of the facility processes may be used as an alternative to testing if such knowledge is sufficient to meet the intent of the waste analysis requirements.

- The wastes must be reexamined if the wastes or the processes generating the wastes change.

- A written waste analysis plan is required which presents the specific parameters that the waste will be analyzed for, the rationale for selecting the parameters, sampling and test methods, and the frequency with which the initial waste analysis will reviewed or repeated. The plan must be maintained in the facility operating record.

- If wastes are received from off-site, procedures are required to ensure that the wastes received are as anticipated. (Since most of the Hanford Site does not receive wastes from off-site, this requirement is not applicable for most Hanford facilities.)

The waste analysis requirement is an important step toward effective and safe waste handling procedures. The waste analysis requirement is not

simply a recordkeeping system for analytical data. The facility operator must carefully examine the precise function and nature of the TSD operations to formulate a suitable wastes analysis program.

Waste analysis is necessary for a proper closure plan. An understanding of the wastes is necessary to determine effective methods to remove and/or treat the dangerous wastes and to decontaminate the facility. Similar requirements exist for post-closure and groundwater monitoring activities.

Content of the Waste Analyses Plan

Process Control and Monitoring. The waste analysis plan must consider the wastes at all stages of the TSD processes where the wastes may differ from one stage to another. For example, a dangerous waste being treated in a tank should be analyzed before and after the treatment process. It should be analyzed prior to the process to ensure that the treatment is appropriate for the waste and does not result in a reactive or otherwise dangerous situation. The waste analysis should be accomplished after the treatment to ensure that the process is successful in effectively treating the waste.

Storage of wastes in tanks or containers must address the physical and chemical parameters that will be used to demonstrate the wastes are being properly managed. In addition to the compatibility demonstration discussed below, examples of waste analysis issues for storage facilities include:

- Specific gravity/weight of waste to document that the tank or container can physically support the contents;

- Settlement of solids resulting in unwanted solidification or crystallization of the waste in the bottom of a tank;

- Verification that the chemical and physical characteristics of the waste are not changing over time;

- Monitoring for pressure increases or potentially explosive conditions (especially for ignitibles);

- Waste analysis prior to treatment or further storage after a waste has leaked into a secondary contaminant structure; and

- Other applicable parameters depending on the site specific situation.

The waste analysis plan must also identify tolerances that the wastes must meet in terms of specific parameters (i.e., measurable chemical or physical properties). The plan must show how the wastes are monitored to ensure that the specific tolerances are met. For example, consider a treatment tank that is designed to receive dangerous waste with a pH of about 8.0 and boost the pH to about 12.0. The waste analysis plan must note the range of pH around the 8.0 and 12.0 target values. The plan must describe in detail how, when, and where the waste will be sampled and tested to ensure that the pH of the incoming and outgoing waste falls within the specified ranges.

Material Compatibility The waste analysis must show the compatibility between the wastes and all materials that come in contact with the wastes. For example, the compatibility between the wastes and any tank materials, container materials, synthetic liner materials, secondary containment materials, etc., must be documented as a result of the waste analysis program.

Representative Sampling The waste analysis plan must note specifically how representative samples of the wastes will be obtained. Information that must be provided includes:

- Methods to ensure that the samples properly represent the range of the characteristics of the wastes;

- Sampling techniques; and

- Sampling equipment.

Quality Assurance and Quality Control The waste analysis plan must detail the quality assurance/quality control program that ensures that all of the waste analysis information is technically defensible and properly documented. The QA/QC program should address:

- The number of samples and sample blanks required for statistical completeness;
- Preparation, maintenance, and cleaning of containers and equipment;
- Certification of any laboratories used;
- Chain-of-custody procedures and proper sample handling;
- Laboratory testing methods approved by the EPA or state regulatory agency and justifications if non-approved methods are used;
- Health and safety protocols; and
- Proper methods of data compilation, review, and presentation.

APPLICABILITY

B Plant has been identified as a TSD facility in the Part A permit application. Thus, the B Plant facility is required to prepare and implement a waste analysis program for the dangerous wastes managed on-site. The program must be detailed within a written waste analysis plan.

INFORMATION REVIEWED AND CURRENT STATUS

The current status of the waste analysis plan and program at the B Plant facility was assessed through interviews with facility personnel and a review of various documentation provided by WHC.

The B Plant facility has prepared a response letter as the written waste analysis plan. This response letter addresses the waste analysis plan requirements of WAC 173-303-300 and identifies where the required controls will reside at the time of NCAW processing startup. The letter only addresses waste that will be received from Tank Farms. In that waste being stored in tanks has been at the facility for many years it may be possible to meet the requirements for waste analysis by pulling together existing information coupled with the ongoing monitoring program.

A sampling schedule has been prepared and implemented for B Plant and WESF that identifies the routine sample points and contains the sample type, analysis required, range, sample frequency and turnaround time, and sample size.

B Plant has detailed sampling plans that specify how samples will be taken from tanks. Waste analysis is not provided for Cell 4 container storage.

CONCLUSIONS AND RECOMMENDATIONS

- (Waste Analysis Plan) Revise the written waste analysis plan to include a description of the waste analysis program specific to the currently active TSD units. This plan must include details of the specific analytical procedures used for waste analysis. The plan must also address those specific items as described in the regulations and requirements narrative.

- (Waste Analysis Plan) Develop a waste analysis plan for containerized wastes being stored in Cell 4.

- (Waste Analysis) Develop a program for verifying knowledge of wastes being stored at the B Plant facility to ensure that the wastes are being properly managed.

- (Waste Analysis) Confirm through the waste analysis that the wastes in the storage tanks are compatible with the tank materials and containment structures. This does not necessarily need to be accomplished through additional testing if it can be shown through existing information that the compatibility requirements are being met.

- (Waste Analysis Plan) Detail the quality assurance and quality control (QA/QC) as it relates to sample collection and laboratory analysis.

SECURITY
WAC 173-303-310

REGULATIONS AND REQUIREMENTS

The Active Portion Must Be Secured

All TSD facilities must have sufficient security to prevent unknowing entry and to minimize unauthorized entry of people and/or animals to the active portions of the facility. The active portion of a facility is considered the dangerous waste management unit such as a specific tank, container area, or landfill unit within the facility. Transfer areas such as loading and unloading docks are also considered an active portion of the facility. The specific features required of the security system include:

- Signs around the active portions of the facility; and either
- A 24-hour surveillance system; or
- Artificial or natural barriers with controlled access.

Signs

The signs around the active portions of the facility are required to satisfy the following:

- The sign must clearly note the danger associated with the TSD unit and that unauthorized people are not allowed. At a minimum, the sign must read "Danger-Unauthorized Personnel Keep Out".
- The sign must be legible from a distance of at least 25 feet.
- A sufficient number of signs must be placed around the active portion of the facility so that a sign is visible from any approach.

- The sign must be in English as well as any other language predominant in the area around the TSD facility.

24-Hour Surveillance

A 24-hour surveillance system should immediately identify any attempted or inadvertent entry into the active portion of the facility. Continuously monitored closed circuit TV systems and 24-hour guard service are typical types of 24-hour surveillance systems.

Artificial or Natural Barriers

Artificial or natural barriers with controlled access points can also be provide security. Artificial barriers are considered to be items such as 6-foot or higher lockable fences with gates and building enclosures. Natural barriers are such items as rivers, lakes, and steep hillsides. Controlled access points are points where entry and exit to the facility is closely controlled such as lockable or continuously patrolled gates or doors.

APPLICABILITY

The B Plant has been identified as a TSD facility in the Part A permit application. Thus, the B Plant facility must satisfy the TSD security requirements around these units.

INFORMATION REVIEWED AND CURRENT STATUS

The current status and condition of the security around the B Plant TSD units were assessed through interviews with facility personnel, a tour of the facility, facility composite flow diagrams, and observation of the units, via photographs.

Access to the B Plant facility is controlled by the overall Hanford Site security. Access to the B Plant canyon is limited by a restricted entrance to building 271-B and building 221-B which houses the canyon. Building 271-B houses the offices and central control. The main entrance to building 271-B is monitored by the facility personnel during operating periods. The TSD units are located in reinforced concrete cells, located in building 271-B, which are covered by thick, massive concrete cover blocks. Signs warning of the danger and instructing unauthorized people not to enter are posted at the entrances to the canyon.

CONCLUSIONS AND RECOMMENDATIONS

- The control over access to the facility and the individual units is adequate.

GENERAL INSPECTION
WAC 173-303-320

REGULATIONS AND REQUIREMENTS

Inspection Program

Facilities which treat, store, or dispose dangerous wastes must develop and implement a detailed inspection program. A written inspection plan must be developed and maintained in the facility operating records and must address both general and unit-specific inspection requirements. The general inspection requirements refer to inspection of the portions of the TSD facility other than the actual TSD container, tank, landfill, etc., units. Unit-specific inspection requirements are presented as part of the individual container, tank, landfill, etc., requirements.

The general facility inspection program must consider these items:

- Safety equipment such as emergency eye wash stations, protective shields, first aid equipment, and respirators;
- Emergency equipment such as spill control supplies, fire extinguishers, emergency lights, generators, and fire alarms;
- Monitoring equipment such as thermostats, fire detection equipment, level, pressure, and flow transducers;
- Security equipment such as fences, signs, lights, and locks;
- Communication equipment such as radios, intercoms, closed circuit TV systems, and public address systems;
- Other general facility items such as building floors, walls, roofs, elevators, ramps, and vehicles.

Detailed Inspection Plan

The inspection plan should note in great detail what specific items are to be inspected, when they are to be inspected, and what is to be checked for on each item. The level of detail required in an inspection plan is typically underestimated. It is not sufficient to simply "check the closed circuit TV system," as an example. Rather, each of the cameras should be checked for clarity, mobility, and focusing. Each receiving unit should be checked for cleanliness, picture quality, and picture adjustments. The inspection should reflect all elements which are necessary for the proper functioning of the item.

Inspection Records Records of the inspections must be maintained. At a minimum, the logs must note:

- The date and time of the inspection;
- The printed name and signature of the inspector;
- Notations of the observations made; and
- The date and nature of any action required as a result of the inspection.

The inspection logs must be maintained in the facility operating records for at least three years.

Checklists Typically, checklists guide the inspection of particular items. The checklists should reflect the level of detail required of the inspections. The checklists should give specific guidance on what to check on each item, how to inspect it, and how to note any deficiencies. Commonly, the inspection checklists serve as the inspection log and include space to note any responses to problems observed during the inspection.

Frequency of Inspections The frequency of the inspections depends on the specific nature and function of the item being inspected. Equipment which continuously prevents dangerous wastes from spilling or leaking should be inspected daily. Equipment which is used only in the case of an emergency, likely needs to be inspected monthly. In general, the more a failure of a piece of equipment poses a threat to the environment or human health, and the more frequently the item is required to perform its function, the more often it should be inspected. Equipment which is inspected less often should be subjected to a more rigorous inspection.

Unit-Specific Inspections Unit-specific inspection requirements are presented in the respective sections addressing landfills, tanks, and container requirements. Additional inspection requirements for facilities that handle ignitible or reactive dangerous wastes are discussed in the Other General Requirements section.

APPLICABILITY

B Plant has been identified as a TSD facility in the Part A permit application. Thus, the B Plant facility must satisfy the general inspection requirements.

INFORMATION REVIEWED AND CURRENT STATUS

The current status of the general inspection program at the B Plant facility was assessed through interviews of facility personnel and review of various documentation provided by WHC.

The B Plant facility currently has a General Surveillance Procedure that includes general surveillance inside B Plant as well as outside facilities including 211-B Tank Farm, 276-B Organic Storage, and 212-B Cask Station.

The inspection program consists of two required surveillance tours per shift and includes fire checks of the buildings, checks for steam and water leaks or plugged drains, readings from the panel boards, and acknowledgement of alarms. The purpose of the the general surveillance is to check for, and correct if possible, any off-standard conditions.

Checklists are used for inspections of product and solution tanks, general surveillance data (OSR-related), OSR instruments data, 212-B cask station data, and fire watch data. These checklists are very general and do not include sufficient space to record observations and corrective action responses. In addition, the checklists do not include an indication of the operational status of monitoring equipment such as alarms, valves, and gauges.

Current inspection procedures do not specifically address active units and do not include the level of detail as discussed in the boiler plate portion of this section. No mechanism is in place to record corrective actions accomplished on the inspection log.

CONCLUSIONS AND RECOMMENDATIONS

- (Inspection Plan) Revise the written inspection plan, including frequency, to specifically address the identified waste management units and associated ancillary equipment, emergency equipment, and personnel safety equipment.

- (Checklists) Revise the inspection checklists for each of the inspections. Include a mechanism for documenting corrective actions noted during the inspections. Examples of items to include in the checklists are:

- Pressure and temperature indicators;
- High and low level alarms;
- Heat detector alarms;
- Emergency equipment (e.g., sprinkler systems); and
- Valve status (e.g., open, closed, etc.).

PERSONNEL TRAINING
WAC 173-303-330

REGULATIONS AND REQUIREMENTS

Training Program

All employees at a TSD facility who are directly associated with the management of dangerous waste must successfully complete a training program which ensures the facility's compliance with the dangerous waste regulations. The regulations define "facility personnel" as

> "All persons who work at, or oversee the operations of a hazardous waste facility, and whose actions or failure to act may result in noncompliance with the requirements (of the regulations)."

The training elements include:

- The proper methods of handling dangerous wastes in the facility;
- The proper response to emergencies and implementation of the contingency plan; and
- Instructors knowledgeable in proper dangerous waste management procedures relative to the specific facility.

New employees should undergo training within 6 months of employment and must be supervised by a trained person until training has been successfully completed. Annually, each employee must review the training program. The facility operating file must include a written training plan and records of each employees completion of the training.

Training Alternatives The regulations offer alternatives for specifically how the training requirements can be met. The training can be accomplished

through a formal course presented either in the facility or by instructors from outside the facility. Alternatively, the training can be accomplished by on-the-job training (OJT) instruction from facility supervisors. It is common for the facility supervisors to attend a course taught by instructors from outside the facility and then to return to the facility to instruct the remaining facility personnel.

The specific elements in the training course should be directed toward the specific wastes, units, and activities at the TSD facility. The training program should address how the types of wastes, units, and management activities relate to the following:

- The chemical characteristics and associated hazards of the dangerous wastes handled at the facility;
- Maintenance, inspection, and use of the facility emergency response and monitoring equipment;
- Proper implementation of the contingency plan including response to a leak, spill, fire, explosion, or groundwater contamination incident;
- Proper operation, inspection, and maintenance of waste feed cutoff systems;
- Proper operation, inspection, and maintenance of the facility communication equipment; and
- Shut down of operations.

For example, the training program should include instruction in how to verify if a tank automatic cutoff system is properly working and how to operate it manually, if necessary.

Instructors The training instructor must have thorough knowledge of the dangerous waste regulations and how they relate to the specific nature of

the facility and dangerous wastes handled at the facility. Given the ultimate responsibility of the training instructor, it is desirable if the instructor is specifically trained in the field of dangerous waste management. On-the-job training is best taught by the facility supervisor since that person is generally in the best position to judge whether an individual has displayed sufficient skills and knowledge to perform required tasks.

New Employees Each employee required to receive the training must do so within the first 6 months of employment at the facility. Until the training is received, the employee must work under the direct supervision of an individual that has received the training. Thereafter, each employee must complete an annual review of the training, at a minimum. If the facility or facility operations change or if the nature of the wastes handled at the facility change, the employees must be retrained.

Training Plan

A training plan documenting the training program must be prepared and included in the facility operating record. The plan should show in detail the specific training procedures and how the training requirements are met at the particular TSD facility. Specifically, the plan must include the following for each position related to the management of dangerous wastes at the TSD facility:

- Job title and description;
- Name of employee filling the position;
- Requisite skills, education, and experience;

- Detailed, written description of the type and amount of training required for the position including course outlines, handouts, exams, etc.; and

- Documentation showing that the required training, both initial training and annual reviews, has been received within the required time period.

Training Records

Records showing that the training requirements are being satisfied must be maintained in the facility operating records. The training plan should be maintained permanently in the files. Documentation regarding individual employee's completion of the required training must be maintained for at least three years after the employee's last day at the facility. The records should be detailed and complete and include the dates of each employee's training and the courses attended. They should allow an inspector to quickly determine that the facility is meeting the training requirements.

APPLICABILITY

The B Plant has been identified as a TSD facility in the Part A permit application. Thus, the B Plant facility must satisfy the training requirements.

INFORMATION REVIEWED AND CURRENT STATUS

The current status of the training program at the B Plant facility was assessed through interviews of the facility personnel and review of B Plant documentation provided by WHC.

Each operator at the B Plant facility is required to complete course 006G concerning general hazardous waste training within six months of

employment. This course includes general dangerous waste management practices, dangerous waste characteristics, and response to emergencies. Once completed, the operators certification is valid for two years at which time (or if operations change) it must be renewed. In addition, the operators must complete course 006H, Generator Hazards Safety Training and On-The-Job Training (OJT), on an annual basis. This is specific training to B Plant and consists of learning each of the facilities operating procedures. This training includes a testing and certification program prior to being allowed to conduct unsupervised operations at the facility.

Process operators specific to B Plant must also complete the following courses within one year of employment:

- o General Radiochemical Operation (GRCO) Training;
- o Emergency Procedure/Abnormal Plant Conditions (EP/APC); and
- o Any other assigned specific courses.

The GRCO training must be updated every 2 years.

Anyone coming in for casual overtime at the facility (e.g., on work order, temporary, or overtime) must familiarize themselves with the "Right to Know" manual, be briefed on the chemicals specific to B Plant, and be given copies of the appropriate MSDS.

Field records of the employees training are maintained in the facility operating file. The B Plant training officer also has access to a computer "soft copy" of operator training. Complete training records are kept at 2101M Building. According to B Plant personnel training records are not currently being retained after an employee terminates employment. B Plant will now keep terminated employee training records on-site for a minimum of 5 years after the termination date.

Supervisory, engineering, and planning personnel may not have received appropriate training. They must receive training if they work directly with dangerous waste or if they supervise someone that works with dangerous waste.

CONCLUSIONS AND RECOMMENDATIONS

- (Training Program) Ensure that engineering, planning, and maintenance personnel that work with dangerous waste or that supervise people working with dangerous waste receive appropriate training. Appropriate training for supervisors is the same training their personnel receive, at a minimum.

- (Training Plan) Although not specifically required in the regulations, compile all training information, course outlines, training schedules, and job descriptions in a single binder labeled "Dangerous Waste Training Plan" or provide a similar mechanism that easily documents personnel training at B Plant.

- (Training Program) Although not specifically required in the regulations, prepare checklists for practical "On-the-Job Training (OJT)" items (e.g., hazardous waste labeling and drum sampling).

- (Training Records) Retain copies of training records for former employees for a minimum of three years after the termination date.

- (Training Program) Assuming engineers, planners, and maintenance personnel that work with dangerous waste or supervise people working with dangerous waste receive appropriate training, the training program for B Plant is adequate.

PREPAREDNESS AND PREVENTION
WAC 173-303-340

REGULATIONS AND REQUIREMENTS

Preparedness and Prevention Requirements

Dangerous waste TSD facilities must be designed, constructed, maintained, and operated to minimize the possibility of a release of dangerous waste to the environment. Regulations directed toward satisfying this general requirement are presented in terms of four general requirements:

- Required equipment;
- Access to communication equipment and alarms;
- Aisle space; and
- Arrangements with local authorities.

Required Equipment

- An internal communication system;
- An external communication system, such as a telephone, capable of summoning emergency aid;
- Portable fire control equipment, fire extinguishers, spill control equipment, and decontamination equipment; and
- Water at sufficient pressure and volume to supply the water hoses, sprinkler systems, foaming equipment, etc.

Internal Communication The internal communication system must allow immediate notification to all employees of any emergency and to inform them of the proper evacuation. The system should also immediately notify emergency response personnel within the facility as to the location and nature of the emergency. Typical internal communication systems include alarms with varying tones, intercom systems, and public address systems. This equipment must be located so that personnel have immediate access, either directly or by visual contact with someone with immediate access, wherever dangerous wastes are being handled.

External Communication External communication systems are required to be able to immediately notify emergency response personnel from outside the facility. In particular, the system should notify the local police and fire departments or local or state response teams as to the location, nature, and extent of the emergency situation. Typically, external communication systems consist of a telephone which is able to call the emergency response personnel. The telephone should be available at the control room or a main office. If only one person is in the facility when it is operating, that person must have immediate access to the external communication system (i.e., a hand held radio phone if the individual is not stationed near a phone).

Fire and Spill Control Equipment The facility's fire control equipment should be based on the specific nature of the TSD activities occurring at the site and the associated potential fire hazards. If the wastes handled require a particular method of fire control (special foams, inert gas, dry chemicals, etc.), that type of equipment should be maintained at the facility. Similarly, the type of spill control equipment (e.g., pumps, vacuums, absorbants, etc.) at the facility should reflect the particular nature of the materials that could potentially spill. The equipment should be stored at the facility near the location where its use would be anticipated.

Water System The water system at the facility must provide adequate water pressure and volume to meet any emergency. The facility sprinkler system,

if present, should be designed for the anticipated water pressure and volumes.

Aisle Space

The TSD facility must maintain adequate aisle space within the facility to allow the movement of emergency equipment and personnel within the facility. Adequate space should be provided to inspect the units within the facility, move maintenance and emergency equipment to areas where it could be necessary, and allow evacuation of the facility.

Consultation with Emergency Aid Agencies

Local agencies that may respond to an emergency at the TSD facility should be consulted to exchange information and make arrangements between the TSD facility and the agencies. Such relationships should particularly be developed with the local police and fire departments, local hospitals, and state emergency response teams. Specific information that should be provided to the local police and fire departments and emergency response personnel include:

- Layout of the facility;
- The types, nature, amount, location, and hazards associated with the dangerous wastes handled at the facility;
- Areas in the facility where personnel are typically working;
- Entrances into the facility; and
- Evacuation routes.

Information for local hospitals include the types of dangerous wastes handled at the facility and the associated health dangers associated with

the wastes. The health dangers should include burns and the effects of inhalation, skin contact, ingestion, etc.

Where outside agencies decline to enter into such agreements with the TSD facility, their refusal should be documented and noted in the facility operating record.

APPLICABILITY

B Plant has been identified as a TSD facility in the Part A permit application. Thus, the B Plant facility must satisfy the TSD preparedness and prevention requirements.

INFORMATION REVIEWED AND CURRENT STATUS

The current status and condition of the preparedness and prevention of the B Plant TSD units were assessed through interviews of facility personnel, a tour of facility, and review of documentation provided by WHC.

The Emergency Plan describes and depicts the location of safety equipment, such as fire extinguishers, spill control kits, respirators, emergency exits, and eyewashes, throughout the facility. These items are not located directly adjacent to an identified TSD unit because of the location of the TSD units in the B Plant canyon. Fire sprinkler or foam systems are located in each cell.

Spillage from a cell is routed to Cell 10 and is then jetted back to the E-23-3 concentrator. Each cell is equipped with an emergency fire alarm system which consists of a heat detector that indicates a rising heat temperature within the cell. When activated, an alarm will sound in the dispatcher's office. A water spray system can be manually activated if the temperature in the cell indicates a fire. Cells containing organic waste

have two heat detectors. If both devices are activated, the foam spray system is automatically activated.

An internal phone and paging system is located throughout B Plant. The crane operator maintains communications via a hand-held radio, telephone, and PAX phone.

The Hanford Fire Department has been notified of the general nature of the materials handled at the B Plant facility. Specific information regarding the wastes at the TSD units, location of the TSD units, and the specific hazards associated with the TSD units have been communicated to the fire department. The Hanford Site has general agreements with local hospitals and police departments. These agreements are not specific to the individual facilities on the Hanford Site such as B Plant.

CONCLUSIONS AND RECOMMENDATIONS

- (Preparedness and Prevention) From a general standpoint, and based on the remote nature of the TSD units, the B Plant facility appears to be in general conformance with the preparedness and prevention requirements.

CONTINGENCY PLAN
WAC 173-303-350

REGULATIONS AND REQUIREMENTS

Contingency Plan Requirements

Dangerous waste TSD facilities must develop procedures to effectively address emergencies. The procedures should lessen the impact on human health and the environment if fires, explosions, or releases of dangerous wastes to the environment occur. The emergency procedures to be followed in the TSD facility must be presented in a contingency plan. The contingency plan must include the following:

- A detailed description of the specific actions to be taken if specific emergencies occur;
- A description of the arrangements made with local agencies which might be required to respond in the event of an emergency;
- A current list of the emergency coordinator(s) including work and home phone numbers and address;
- A list of all emergency equipment and its location at the facility; and
- An evacuation plan for the facility personnel.

Content of the Contingency Plan

Detailed Responses to Emergencies The contingency plan must present detailed instructions to facility personnel on what specific actions to take in the event of specific emergencies. The nature of the TSD facility, its dangerous wastes management units, and the specific activities which

occur in each of the units as well as other portions of the facility need to be considered in postulating what potential emergencies could occur.

Once the potential emergencies are identified, detailed and specific responses to those emergencies must be developed and presented. The contingency plan should be written as instructions to the facility personnel for their use during an emergency. The plan should not be a generic, standard discussion of what to do in the case of an emergency. Simply stating that "If you observe a spill, clean it up" does not satisfy the requirements of a contingency plan. Examples of the level of unit/event specific instructions are required are as follows:

If you observe a leak in the sidewalls of Tank A take the following steps:

- Alert the emergency coordinator
- Turn off valve B to stop inflow into tank
- Confirm that the flow has been stopped by observing flow meter C
- Turn on pump D to empty tank
- Confirm that the tank is emptying by observing the level indicator on the tank
- Turn on sump pump E to empty the tank containment area

If you observe a fire in the Building A container storage area, take the following steps:

- Initiate the fire alarm and notify the emergency coordinator
- Identify the source of the fire and note if drums containing chemical B is involved. If so, tell the emergency personnel when they arrive
- If chemical B is in the fire do not apply water, use fire extinguishers located near control panel
- If chemical B is not in the fire, apply water using the hoses located on south wall

Authority during Emergencies The plan must also include detailed discussions of who has what authority at what time. For example, the facility emergency coordinator could have the authority over a fire until

the fire fighting crews arrive. Then the fire chief assumes prime responsibility.

Agreements with Local Authorities The contingency plan should document all of the arrangements and agreements that have been made with local agencies. These agreements would be those required by the preparedness and prevention requirements (WAC 173-303-340) and include local fire departments, police departments, and local emergency response teams. The nature of the agreements should be provided so that roles and responsibilities in the event of specific types of emergencies can be determined. Copies of the contingency plans are required to be provided to the local agencies with which the facility has agreements.

List of Emergency Coordinators The list of emergency coordinators in the contingency plan must be complete and current. Since the plan will be used as an instruction manual in the event of an emergency, it must be clear from the plan who the emergency coordinator is and how to contact that person.

List of Emergency Equipment The contingency plan must include a list of all of the emergency equipment at the facility. This equipment is noted in the preparedness and prevention requirements (i.e., fire extinguishers, spill control equipment, communication systems, etc.). The plan should list all of the equipment available, its location within the facility, and a physical description of each item. The use(s) and capabilities of the equipment should also be provided. A plot plan is an excellent way to show the location of the emergency equipment. Again, the information should be presented in a manner which helps the facility and emergency personnel effectively respond to specific emergencies in the facility.

Evacuation Routes Emergency evacuation routes and procedures must be presented in detail in the contingency plan. Methods to communicate the proper routes under specific emergency situations should also be documented. For example, different types of alarms could signify which specific evacuation route is appropriate in particular emergencies.

Filing and Modifying the Contingency Plan

A copy of the contingency plan must be maintained in the facility operating record. It should be easily available to inspectors so that they can quickly determine if the facility plan satisfies the contingency plan requirements.

The contingency plan must be amended if it fails during an emergency, if applicable regulations change, if the facility or facility operations change, if the emergency coordinators change, or if the list of emergency equipment changes.

APPLICABILITY

B Plant has been identified as a TSD facility in the Part A permit application. Thus, the B Plant facility is required to develop and maintain a contingency plan for the dangerous wastes managed on-site.

INFORMATION REVIEWED AND CURRENT STATUS

The current status of the contingency plan and program at the B Plant facility was assessed through interviews with facility personnel and review of B Plant documentation provided by WHC.

The B Plant facility does not have a contingency plan specific to the identified TSD units within the facility. Some of the items that are required in a contingency plan were found in several different documents, but these were not specific for all of the identified TSD units in B Plant.

The plant operating procedure for the E-23-3 concentrator unit contained some information needed for a contingency plan, but this is the only one of the identified TSD units that contained some specific information on contingency plan type responses.

Another plant operating procedure for disposal of nonradioactive hazardous substances contained general information and instructions on how to respond to unplanned discharges (spills), but lacked specific information for each identified TSD unit. These general instructions only advised the worker to:

- Determine the identity of the spilled substance;
- Obtain a Reportable Quantity (RQ) limit;
- Estimate the volume of spilled substance;
- Request for additional help;
- Neutralize the spilled substance; and
- Cleanup and dispose of the spilled substance if the amount is below the RQ limit and pH is between 5 and 10.

There was very little or no information included in this document that described the specific steps needed to perform these procedures.

Another plant operating procedure contains information on how to respond to fires in process cells and/or exhaust filters. This document did not contain any diagrams or list of fire extinguishers or emergency equipment within the building. The 271-B building emergency plan did contain a list of fire extinguishers and emergency equipment within the facility along with a description of their location, but there was no facility diagram included depicting their locations. In addition, the water and foam spray equipment is not described and is not presented on a diagram showing the location of the system.

In discussions with facility personnel, it was learned that most of the emergency response procedures related to spills from process cells or ancillary equipment are performed but are not in written form. In

addition, the facility has no definite plans for what to do with spilled NCAW or organic wastes should a leak occur from one of the existing units. The normal procedure when a leak occurs is to notify the supervisor and then decide what to do.

During the B Plant assessment, the canyon crane was out of service. This crane would be needed if an emergency situation occurred in one of the cells. B Plant personnel indicated that there are alternatives to the crane if they need to have access to a cell when the crane was not operable. Alternate procedures for cell access are not included in written form.

The facility does not have detailed written procedures for taking a tank or ancillary equipment out of service for repair or replacement. This is also true for malfunctioning monitoring equipment. One document reviewed indicated that the specific gravity monitoring devices for Tanks 27-3 and 28-3 had failed calibration. No documentation was provided detailing how to repair the equipment. It is not known whether the equipment has been repaired.

CONCLUSIONS AND RECOMMENDATIONS

- (Contingency Plan) Although not specifically required by the regulations, the contingency plan for dangerous waste management at the B Plant facility should be pulled together into a single, stand-alone, document for easy reference and to ease compliance reviews by the regulatory agencies.

- (Contingency Plan Content) Include detailed emergency responses specific to each emergency that could reasonably occur at the facility. Include procedures for replacing leaking jumpers, tanks, or failed monitoring equipment. Provide written procedures for cell access if the canyon crane is down for repairs. This includes specific and detailed response activities that will be conducted by the Hanford

Fire Department, B Plant personnel, and/or other emergency responders that may be involved. Operation procedures for the E-23-3 concentrator provide a good example of the level of detail required.

o (Contingency Plan Content) Include in the contingency plan documentation of arrangements with local authorities made in response to the preparedness and prevention requirements in WAC 173-303-340. This is to include arrangements with local fire departments, police departments, hospitals, and emergency response teams as well as documentation of the arrangements with internal Hanford Site emergency responders. Specific roles and responsibilities are to be identified for each type of emergency. Local authorities with which the facility has agreements must be supplied with a copy of the facility contingency plan.

EMERGENCIES
WAC 173-303-360

REGULATIONS AND REQUIREMENTS

Emergency Requirements

Dangerous waste TSD facilities must satisfy specific requirements in the an emergency at the facility. These requirements are directed toward minimizing any hazards to human health or the environment resulting from the emergency. Although the contingency plan is to provide facility-specific instructions in the event of specific types of emergencies, the general emergency requirements present particular responses that are required of all facilities during all emergencies.

The Emergency Coordinator

The emergency coordinator identified in the contingency plan must have the authority to commit the necessary resources to respond to an emergency. Thus, the coordinator is typically one of the senior individuals within the facility. The emergency coordinator should be familiar with the dangerous waste management activities at the facility including the following:

- The facility contingency plan;
- The location and properties of all dangerous wastes handled at the facility;
- The location of all records within the facility; and
- The layout of the facility.

Either the emergency coordinator, or an alternate coordinator who meets the above requirements and who reports to the emergency coordinator, must be

on-site at all times the facility is operating. Specific procedures should be documented regarding how an alternate coordinator remains in contact with the primary coordinator when the primary coordinator is off-site.

The regulations note specific requirements that the emergency coordinator and owner/operator must satisfy in the event of an emergency. The emergency coordinator, in addition to any other activity required by the facility contingency plan, must immediately:

- Activate alarms and communication systems and notify state and local response teams if their help is necessary;

- Identify the nature and extent of any release, fire, or explosion;

- Assess any potential hazards to human health or the environment resulting from the emergency;

- Report any potential threat to the area outside the facility to the appropriate local authorities and help determine if the area needs to be evacuated;

- Take all reasonable measures to stop any releases, fires, or explosions, and ensure that they do not re-occur or spread;

- Properly treat, store, or dispose of any wastes recovered from spills or releases generated during the emergency; and

- Clean, repair, or replace any emergency equipment used or damaged by the emergency and ensure that it is in good working order before resuming operations.

Notification and Reports

The owner/operator must notify the regulatory agencies that the facility equipment has been properly cleaned, repaired, or replaced before resuming operations. The owner/operator must also prepare a written report which includes the following:

- Name, address, and phone number of the facility and the owner/operator;
- Date, time, and type of emergency;
- The types and quantities of materials involved in the emergency;
- The extent of any injuries;
- An assessment of any hazards to human health or the environment due to the emergency;
- The amount and disposition of any material recovered from releases during the emergency; and
- Cause of the emergency and corrective actions taken to prevent reoccurrence of a similar incident.

The report must be submitted within 15 days of the emergency.

APPLICABILITY

B Plant has been identified as a TSD unit facility in the Part A permit application. Thus, the B Plant facility is required to comply with the procedures set forth in WAC 173-03-360, Emergencies.

INFORMATION REVIEWED AND CURRENT STATUS

The current status of the emergency procedures and responsibilities at the B Plant facility was assessed through facility personnel interviews and review of B Plant documentation provided by WHC.

An emergency plan is currently in place for the 271-B complex which covers a variety of buildings in the B Plant building vicinity, including the B plant canyon, offices, and WESF. The plan only covers B Plant in a general sense and does not address each specific waste management unit. The plan does include a list of emergency phone numbers, descriptions of emergency signals and responses, evacuation routes, list and location of emergency equipment, and a generic description of hazardous materials and processes.

CONCLUSIONS AND RECOMMENDATIONS

- (Emergency Coordinator) Ensure that the emergency coordinator and all alternate emergency coordinators are intimately familiar with the contents of the facility contingency plan, location and properties of all wastes managed, and the location of all records pertinent to the management of wastes at B Plant.

- (Emergency Procedures) Develop emergency procedures specific to each waste management unit.

- (Emergency Procedures) Develop specific shutdown instructions for each waste management unit.

- (Emergency Procedures) Include agency notification requirements in the emergency shutdown procedures.

- (Emergency Procedures) Although not specifically required by the regulations, include a map depicting the location of all fire extinguishers and emergency equipment to enhance the efficiency of response to an emergency. This map belongs in the Contingency Plan.

MANIFEST SYSTEM
WAC 173-303-370

REGULATIONS AND REQUIREMENTS

Dangerous waste facilities that receive waste from off-site are required to adhere to specific manifest practices. These manifest practices include signing procedures, recordkeeping, methods to handle discrepancies, and reasons and methods to refuse a shipment.

The Hanford Site rarely receives shipments of dangerous wastes from off-site. Thus, the manifest requirements are not typically applicable to the assessment of Hanford Site facilities. If, however, shipments of dangerous wastes are received from off-site for treatment or disposal, manifest requirements would apply and the facility personnel must:

- Sign and date each copy of the manifest;
- Note any discrepancy within the manifest information or between the manifest information and the shipment;
- Provide the transporter a signed copy of the manifest;
- Return a signed copy of the manifest to the generator; and
- Retain a signed copy of the manifest in the facility operating file.

If a discrepancy is noted in the manifest, it must be immediately reconciled and clarified with the generator and/or transporter. A written report to regulatory agency explaining the discrepancy is required if the conflict is not resolved within 15 days.

APPLICABILITY

B Plant does not receive dangerous waste from off-site. Thus, the manifest requirements in WAC 173-303-370 do not apply to B Plant.

CONCLUSIONS AND RECOMMENDATIONS

- (Regulations and Requirements) Although not specifically required by the regulations use a mechanism similar to the manifest system to track containerized dangerous waste being stored in Cell 4.

FACILITY RECORDKEEPING
WAC 173-303-380

REGULATIONS AND REQUIREMENTS

Facility Recordkeeping Requirements

Dangerous waste TSD facilities must maintain complete and accurate records of all dangerous waste management activities that have occurred at the site. The record system should document all dangerous waste activities and allow easy reconstruction of past dangerous waste management practices. Particularly, the records should be such that an inspector from a regulatory agency can quickly determine whether the facility is operating in compliance with the dangerous waste regulations.

Required Records

Specific items that should be included in the facility records as a minimum are:

- Records of the amount and nature of dangerous wastes treated, stored, or disposed at the facility including dates, source, final disposition, methods, etc.;

- Records of where (what units within the facility) specific wastes have been, or are, treated, stored, or disposed;

- Waste analysis results including laboratory test results, waste designation narratives, and any petitions regarding waste designation that have been submitted;

- Contingency plan, emergency reports, and records associated with past emergency situations at the facility;

- Inspection logs and records of follow up actions as well as results from inspections by outside inspectors;

- Groundwater monitoring data and testing results; and

- Closure and post-closure plans and cost estimates.

Waste Identification

Records which document the nature of the wastes and their management must describe the waste by its common name and by its dangerous waste number. The TSD management method codes must also be provided. For example, a waste corrosive liquid stored in a tank would be referred to as S02 (management code for storage in a tank) of a D002 (corrosive) waste.

Records Location and Access

The facility dangerous waste records should be maintained in a single location separate from the general facility records so that they can be easily found and reviewed. Although it is not required by the regulations, it is recommended that a duplicate of the dangerous waste records be maintained in a separate location in case the originals are destroyed. The records must be retained at least until closure of the facility.

The records should be maintained under the control of a select few individuals within the facility. Unauthorized personnel should not be allowed access to the dangerous waste records. The records must be available for inspection upon request by the regulatory agencies.

APPLICABILITY

The current status of B Plant recordkeeping practices was determined through interviews of B Plant personnel and a review of various recordkeeping documents supplied by WHC.

The primary recordkeeping problem at B Plant is that the facility operating records do not specifically address the active storage tanks and Cell 4 container storage. Most of the documentation addresses the proposed NCAW treatment process or the discontinued cesium and strontium extraction process. One exception is that detailed operation procedures are provided for the E-23-3 concentrator system. In addition, most of the Cell 4 documentation is intermixed with WESF documentation making it difficult to separate and evaluate conformance at B Plant.

Facility records related to dangerous waste are located in various files at the facility. The records are so scattered it was difficult to determine if specific records existed. However, we feel that pertinent records do exist, albeit, they are difficult to find.

Many of these record are deficient as described elsewhere in this assessment report. There is no system in place to keep dangerous waste records in a single file location for easy access and to allow for easy reconstruction of past dangerous waste management practices.

CONCLUSIONS AND RECOMMENDATIONS

- (Required Records) In addition to existing TSD records currently maintained in various locations around the facility, include the following dangerous waste information in a single file location:

  - Inspection logs for all storage tanks and storage in Cell 4;
  - Training plan and documentation;
  - Contingency plans for all active tanks and Cell 4 container storage;
  - Waste analysis plan and data for active tanks and Cell 4 storage; and
  - Closure plan for B Plant as it is developed.

- (Required Records) Develop detailed operation plans and recordkeeping for active storage tanks and container storage at B Plant. Separate B Plant activities related to Cell 4 operation from WESF activities.

- (Records Location and Access) Although not specifically required by the regulations, maintain all records pertaining to the management of dangerous waste in a single dangerous waste file. Develop a systematic approach to properly file all relevant information so that it can be easily retrieved. Control access to the dangerous waste file so that documentation is not misplaced.

FACILITY REPORTING
WAC 173-303-390

REGULATIONS AND REQUIREMENTS

Reporting Requirements

The owner/operator of a dangerous waste management facility must submit reports on various activities at the facility. In particular the following reports are required:

- Reports documenting unmanifested dangerous waste shipments;
- Annual reports; and
- Other additional reports.

Unmanifested Shipments

Facilities must report dangerous waste shipments received from off-site without an accompanying manifest. Since the Hanford Site rarely receives dangerous waste from off-site, the Hanford Site facilities do not typically have cause to submit this type of report.

Annual Reports

By March 1 of each year, dangerous waste TSD facilities must submit annual reports which document the dangerous waste activities at the facility for the previous calendar year. A particular form, Form 5, available from the regulatory agency, is to be used to develop the annual report. Specific information relevant to the Hanford Site facilities that is required on the form includes:

- The EPA/state identification number, name, and address of the facility;

- The amount and nature of all dangerous wastes treated, stored, or disposed at the facility using the dangerous waste numbers;

- The methods of treatment, storage, or disposal used at the facility using the dangerous waste handling codes; and

- The most recent closure and post-closure cost estimates.

The Hanford Site submits a single annual report for the entire site. The report includes the TSD activities at each of the individual facilities. The individual facilities submit their annual information to the preparers of the overall Hanford Site annual report.

Other Reports

Other reports which may be required of the TSD facilities include reports documenting emergency situations as required in the emergency regulations and any other report that the regulatory agencies require on a case-by-case basis.

APPLICABILITY

B Plant has been identified as a TSD facility in the Part A permit application. Thus, the facility must satisfy the reporting requirements.

INFORMATION REVIEWED AND CURRENT STATUS

The current status of the reporting practices at B Plant was determined through interviews with facility operators and review of documents supplied by WHC.

1987 annual dangerous waste report information for B Plant indicates that 1,000 gallons of corrosive wastes were neutralized (i.e., adjusted to a pH

of between 4 and 9) in AMU tanks/scale tanks. In addition, 1,500 gallons of corrosive sulfuric acid and 750 gallons of corrosive sodium hydroxide from the 217-B demineralizer were neutralized in the 211-B chemical tank farm. No other TSD activities were reported for B Plant during calendar year 1987. Based on information supplied, this treatment appears to be elementary neutralization. Annual reporting is required but a TSD permit is not necessary as long as the requirements of WAC 173-303-400 (2) (c) (iv) are met.

Mixed waste (MW) being stored in B Plant tanks (i.e., NCAW and organic wastes) and potential MW that may have been stored in containers in Cell 4 were not included in the 1987 annual report information. No treatment of dangerous waste occurred during 1987 and MW were not stored in tanks or containers for longer than 90 days after the effective date of the November 1987 MW Rule. The interpretation can be made that, technically, these stored wastes were not subject to the 1987 annual reporting requirements.

The annual report did not include cost estimates for closure of the facility.

CONCLUSIONS AND RECOMMENDATIONS

- (Annual Report) Although it is not required for federal facilities under interim status, include cost estimates for closure of TSD tanks and containers in the annual report.

- (Annual Report) Ensure that storage in tanks and containers is included in the 1988 annual report information.

OTHER GENERAL REQUIREMENTS
WAC 173-303-395

REGULATIONS AND REQUIREMENTS

General requirements that apply to dangerous waste TSD facilities include:

- Precautions for ignitable, reactive, or incompatible wastes;
- Labeling for tanks and containers;
- Relationships with other environmental laws and regulations;
- Loading and unloading areas; and
- Storage time limits for impoundments and waste piles.

Ignitible and Reactive Wastes

The special requirements that pertain to ignitible or reactive wastes apply to wastes which are designated as such by the dangerous waste designation procedures. Specifically, any wastes meeting the characteristics described in WAC 173-303-090(5) or -090(7) are subject to these requirements. The special requirements applicable to ignitible or reactive wastes are:

- Ignitible or reactive wastes must be separated from sources of ignition such as open flames, sparks, heat, etc.;
- "No Smoking" signs must be placed wherever ignitible or reactive wastes are being handled; and
- The facility must be inspected annually by a person knowledgeable in the Uniform Fire Code.

In general ignitible, reactive, or incompatible wastes and materials must be handled in a manner that does not:

- Generate extreme heat, pressure, fire, explosion or violent reactions;
- Produce uncontrolled gases or dusts that are toxic, flammable, explosive or otherwise threaten human health or the environment; or
- Damage the structural integrity of the facility or unit containing dangerous waste.

Satisfying the ignitible, reactive, or incompatible waste general requirements typically includes the facility accomplishing the following:

- Identification of any ignitible, reactive, or incompatible wastes handled within the facility;
- Identification of potential scenarios and methods that may result in incompatible wastes being combined;
- Identification of sources of ignition or reaction within the facility;
- An analyses of handling methods and units storing ignitible, reactive, or incompatible wastes relative to the above items; and
- An analyses of treatment methods and units used to render the waste non-ignitible, non-reactive, or compatible.

Identification of Ignitible, Reactive, or Incompatible Wastes The identification of any ignitible, reactive, or incompatible wastes should be made an integral part of the waste analyses plan. The plan should consider the nature of the wastes at intermediary steps in any treatment processes to determine the ignitibility, reactivity, or incompatibility. All materials which come into contact with the wastes should be considered to

determine any potential for incompatibility between the wastes and the materials.

The dangerous waste activities and processes should be reviewed to identify ways that incompatible wastes may inadvertently be allowed to mix. These include containers that are supposedly empty but contain incompatible residue and improperly decontaminating tools and equipment.

Sources of Ignition Sources of ignition may consist of other than open flames and heat. Equipment and tools used around ignitible or reactive wastes should be constructed of non-sparking materials. Ignitible wastes should be segregated from wastes which generate significant amounts of heat when exposed to common materials such as water or air. Sources of static electricity should be avoided and tanks and containers should be grounded.

Annual Fire Inspection The purpose of the annual fire inspection is to confirm that the facility is designed and operated in conformance with the Uniform Fire Code. The regulations require that facilities that handle ignitible wastes be designed, constructed, and operated in general accordance with the Uniform Fire Code. The annual inspection must be performed by a professional person who is knowledgeable of the code. The local fire marshal or a facility engineer with a background in fire codes typically satisfy this criteria. The inspection should also include checking for practices which present potential for causing fires or explosions.

Tank and Container Labels

Tanks and containers must be marked with a label which notes the contents and the major risks associated with the wastes. Specific requirements are provided in the technological standards for each of the specific types of units.

Other Requirements

Other general requirements note how the dangerous waste regulations relate to other environmental laws. Other laws include those pertaining to the Clean Water Act, Toxic Substances Control Act, and Clean Air Act. Particular requirements for loading and unloading areas and storage time limits for impoundments and piles are also presented.

APPLICABILITY

B Plant tank and container storage activities have been identified as TSD units in the Part A permit application. Thus, B Plant must satisfy the requirements of WAC 173-303-395.

INFORMATION REVIEWED AND CURRENT STATUS

The current status of the facility practices pertaining to the other general requirements was determined through interviews of the facility operators and a tour of the facility.

Organic waste being stored at B Plant was once used for strontium extraction. Organics in the waste consists of approximately 0.2 M to 0.4 M di(2-ethylhexyl)phosphoric acid and 0.2 M tri-butyl phosphate in a normal paraffin hydrocarbon (NPH) solution. The flash points of the individual constituents are known. However, the flashpoint of the mixture is not known. The constituent with the lowest flash point is NPH. This flash point, over 149 degrees F, is above the designation level for ignitability (140 degrees F). Thus, the organic waste is not an ignitible dangerous waste. Even though the organic waste is not ignitible it is being managed in a manner equivalent to the RCRA requirements for preventing ignition of the waste.

Containers being stored in Cell 4 could contain ignitible (waste paint) and reactive (sodium vapor lights) waste. There is some question whether ignitible wastes are being stored in Cell 4 (See the Subpart I section of this report - Page 77). Reactive wastes (i.e., sodium vapor lights) are (or may be) stored in Cell 4. Ignitible and reactive wastes must be managed in a manner that prevents reaction or ignition. Sodium is water reactive. In the event of a fire, water from the sprinkler system could contact sodium in Cell 4 causing an uncontrolled reaction. This uncontrolled reaction could ignite paint waste in the cell. Procedures for preventing the uncontrolled reaction of sodium in the event of a fire are not provided. In addition, the commingling of water reactive and ignitible wastes is considered to be incompatible unless procedures are in place to prevent an incompatible event from occurring.

Fire inspections are not conducted by experienced individuals familiar with the Uniform Fire Code, such as the Hanford Fire Department. Water pressure in the sprinkler system and fire extinguishers are inspected monthly by B Plant personnel.

No smoking signs are not in place at the entrance to the canyon. Standard procedures for entering areas with radioactivity prohibit smoking. In addition, it is virtually impossible to smoke while wearing a respirator, which is required for access to the canyon area.

Ignitible/reactive containers are not labeled with the major risks associated with the waste. See sections dealing with Subparts I and J in this assessment report for additional information.

CONCLUSIONS AND RECOMMENDATIONS

- (Ignitible and Reactive Wastes) Place no smoking signs at entrances to the canyon. Alternatively, receive a variance from this requirement from the regulatory agencies.

- (Ignitible and Reactive Wastes) Ensure that the B Plant facility is inspected at least annually by an individual that is familiar with the Uniform Fire Code.

- (Ignitible and Reactive Wastes) Remove water reactive wastes (i.e., sodium vapor lights) to an area without a water sprinkler system and supply the area with appropriate emergency equipment such as Purple K fire retardant. As an alternative, document in the operating record that the amount of sodium contained in Cell 4 and the way the containers are managed would not result in an uncontrolled reaction.

- (Ignitible, Reactive, or Incompatible Wastes) In accordance with a detailed waste analysis plan document, include in the operating record that incompatible wastes (i.e., ignitible paint and reactive sodium) are not being commingled. Alternatively, document that the commingling of incompatible wastes does not threaten human health or the environment.

- (Tank and Container Labels) Label dangerous waste containers with a label that identifies the major risks associated with the waste.

SITING STANDARDS
WAC 173-303-420

REGULATIONS AND REQUIREMENTS

Dangerous waste TSD facilities must meet specific standards regarding the physical location of the facility. The siting standards generally address minimum distances that TSD facilities must be from surface waters, public facilities, drinking water supplies, and other sensitive features. Facilities may not be located in earthquake sensitive areas or a floodplain.

The specific siting standards are currently being significantly revised and rewritten. The final form of the siting standards can not, at this time, be anticipated. Thus, it is not possible to assess facilities relative to the dangerous waste facility siting criteria.

APPLICABILITY

B Plant tanks and containers have been identified as TSD units in the Part A permit application. Thus, B Plant may be subject to future siting requirements.

PERFORMANCE STANDARDS
WAC 173-303-430

REGULATIONS AND REQUIREMENTS

The general performance standards allow for the regulatory agencies to apply, on a case by case basis, standards that are more stringent than those specifically presented in the regulations. The general performance standards require that dangerous waste TSD facilities must be designed, constructed, and maintained in a manner that prevents degradation of human health or the environment. Specific areas of environmental damage noted in the regulations include:

- Ground and surface water quality;
- Air quality;
- Slope and soil instability;
- Flora and fauna;
- Aesthetics of public or adjoining lands; and
- Excessive noise.

The general performance standards also require that the facility treat or recycle waste material as much as economically feasible.

In essence, the general performance standards allow the regulatory agency to control the operations at a TSD facility even if no specific regulation (other than the general performance standards) is being violated. By citing the general performance standards and identifying a "threat to human health or the environment," the agency can undertake enforcement action to correct the source of the threat. Thus, the general performance standards

require that, above all else, the owner/operator identify facility specific practices that, although may not fail any specific TSD requirement, could present a threat to human health or the environment.

APPLICABILITY

B Plant tanks and containers have been identified as TSD units in the Part A permit application. Thus, B Plant must satisfy the performance standards.

INFORMATION REVIEWED AND CURRENT STATUS

The current status of practices at B Plant pertaining to the performance standards was determined through interviews with facility personnel and a tour of the facility.

Other than deficiencies noted elsewhere in this report, no evidence of improper practices that pose a threat to human health or the environment were observed. No recent releases of dangerous waste to the environment were reported by facility personnel.

CONCLUSIONS AND RECOMMENDATIONS

- The facility is designed and is being operated in general accordance with the performance standards.

BUFFER MONITORING ZONES
WAC 173-303-440

REGULATIONS AND REQUIREMENTS

Ignitible or Reactive Wastes

Dangerous waste TSD facilities that handle ignitible or reactive wastes are required to maintain specific minimum distances between the TSD units and public ways, streets, and property lines. In particular, facilities treating or storing ignitible wastes in tanks must meet buffer zones specified by the National Fire Protection Association Code. The specific reference for the NFPA requirements is discussed in the guidance for tanks.

Explosive Wastes

The regulations also present buffer zone requirements for dangerous wastes that are explosive. Treatment or storage of these wastes must be provided buffer zones equivalent to the Uniform Fire Code's American Table of Distances for Storage of Explosives, Table 77-201, 1979 edition.

New Land Based Facilities

The buffer zone requirements also present minimum distances that new land based TSD units are required to meet. The minimum distance is based on the travel time of the wastes from the active portion of the facility to the nearest down gradient well or surface water used for drinking water. The travel times must be longer than 3 years for DW wastes and 10 years for EHW wastes. These buffer zone requirements will likely be changed be the new siting standards currently being developed.

APPLICABILITY

B Plant has been identified as a TSD container storage facility storing ignitible and reactive wastes in the Part A permit application. Thus, B Plant must satisfy the buffer zone monitoring requirements.

INFORMATION REVIEWED AND CURRENT STATUS

The current status of B Plant buffer zones was determined through observation of the facility and interviews with facility operators.

B Plant is located in the 200 East area on the Hanford Site. The facility is located several miles from the nearest public way, street, or property line. The site is within a few miles of the Columbia River.

CONCLUSIONS AND RECOMMENDATIONS

- (Ignitible and Reactive Wastes) The facility location provides adequate buffer zones for the storage of ignitible and reactive wastes.

GROUNDWATER MONITORING
40 CFR 265 SUBPART F

REGULATIONS AND REQUIREMENTS

Dangerous waste TSD facilities with land based units must monitor the groundwater in the area of the facility. The following are considered land based units:

- Landfills;
- Surface impoundments;
- Waste piles; and
- Land treatment units.

Furthermore, tanks which are unable to be "clean closed" (no contamination remaining after closure) must be closed as a landfill and also require a groundwater monitoring program.

The responsibility for the groundwater monitoring program at the Hanford Site is currently outside the authority of the operators of the individual facilities. Furthermore, the groundwater monitoring programs currently existing at the Hanford Site are not necessarily accomplished on an individual facility basis. Since this assessment project is directed toward the individual facilities and individual facility operators, an assessment of the facilities relative to the groundwater monitoring requirements is considered outside the scope of this project.

Elements of a Groundwater Monitoring Program

The groundwater monitoring program should include the following components:

- Hydrological characterization of the area surrounding the facility;
- Designing a groundwater monitoring network;
- Developing and documenting proper monitoring well installation and construction methods;
- Accomplishing a field inspection program to ensure quality assurance and quality control; and
- Developing methods to properly sample, test, and report the results of groundwater quality monitoring.

APPLICABILITY

B Plant is not a land unit and the groundwater monitoring requirements of Subpart F will not apply as long as the facility is "clean closed". Whether the tanks, ancillary equipment, and containment structures can be "clean closed" will be determined when the facility closure plan has been developed.

CLOSURE
40 CFR 265 SUBPART G

REGULATIONS AND REQUIREMENTS

Closure Requirements

When dangerous waste TSD facilities are shutdown or taken out of service, they must be properly "closed". Closures of TSD facilities are usually aimed at cleaning up all hazardous wastes at the facility and restoring facility to an uncontaminated condition. When it is not possible to remove all dangerous wastes (referred to as "clean closure"), the owner/operator must undertake post-closure care of the facility site.

Performance Standard The regulations set forth a closure performance standard that applies to all facilities. This performance standard requires the owner/operator to close the facility in a manner that:

- Minimizes the need for further maintenance;
- Controls, minimizes or eliminates releases of dangerous wastes after closure to protect public health and the environment; and
- Complies with the specific closure requirements for individual waste management units (e.g., containers, tanks) set forth elsewhere in the regulations.

For listed and characteristic dangerous waste, clean closure must be to background environmental levels. For other types of dangerous wastes, the contamination must be removed to a certain level depending on the contamination and other factors.

The general intent behind the performance standard is to ensure, to the maximum extent possible when a facility is closed, that it will pose no or

minimal risk to people and the environment after closure. Clean closure is considered by the regulatory agencies to be the best way to achieve this standard. Even when clean closure is not possible, the same general principle of no or minimal risk will usually guide the agencies' reviews and comments on a facility's closure activities. The focus in these cases will be on minimizing risk to people and the environment, and on setting up the post-closure care program such that the facility will continue to pose no or minimal risk during and after the post-closure care period.

Notifications The owner/operator must notify Ecology and EPA in writing at least 60 days before the date closure of a land disposal unit (surface impoundment, waste pile, land treatment, or landfill unit) is expected to begin. Forty-five days notice is required for all other closures.

Once a unit or facility has managed the last volume of hazardous waste, the owner/operator will have 90 days to treat, remove or dispose on-site all hazardous wastes in accordance with the closure plan, and 180 days to complete the remaining closure activities specified in the closure plan. Longer time periods for disposition of hazardous wastes and completion of all other closure activities can be allowed if Ecology and EPA approve them. Within 60 days after closure is completed for a land disposal unit or for an entire facility, the owner/operator must submit a written Certification of Closure to Ecology and EPA.

Closure Plan Requirements

The device for accomplishing the closure requirements and performance standard is the closure plan. The owner/operator must prepare a written closure plan and submit it to Ecology and EPA as part of the facility Part B permit application.

Closure plans are typically very detailed. The closure plan must take into account all of the different types of waste management units and activities associated with those units when discussing the efforts that will be conducted to close. In addition, certain units (e.g., surface impoundments

and tanks without secondary containment) must have contingent post-closure plans in the event that intended clean closure cannot be performed.

The closure plan must describe, in detail, the steps necessary to achieve full closure at any point during the facility's active life. This will usually result in the closure plan assuming a worst case scenario, where full closure might have to be conducted with the maximum amount of hazardous waste present on-site, and when the greatest level of waste management activities is occurring.

The closure plan must include at least the following information:

- A description of how each tank area at the facility will be closed to achieve the closure performance standard;

- A description of how final closure of the tank area will be conducted to achieve the closure performance standard;

- An identification of the maximum amount of wastes treated in the tanks that will be ongoing at any given time during the facility's active life (worst case closure scenario);

- Descriptions of the methods for remediating the facility during closure, including at least:

  - Removal, transport, storage (temporary and/or permanent), treatment, and disposal (off-site and on-site, where applicable) of hazardous wastes;

  - Identification of the type(s) of off-site waste receiving facilities, where applicable;

  - Steps needed to remove or decontaminate hazardous materials (wastes, constituents and residues) such as the tank, ancillary equipment, concrete cell structure and soils that may be contaminated; and

- Sampling and analysis that will be used to determine the extent of decontamination needed to meet the closure performance standard.

o A schedule for closure of the treatment tanks, including at least the total time needed and for intervening activities so that closure progress can be tracked.

When preparing the closure plan contents described above, the owner/operator must account for, in detail, the activities that will actually need to be conducted to close the facility. Closure can be broken down into the following general activities:

Material Removal
- Sampling
- Analysis
- Remediation
- Facility Reclamation

Materials Staging and Disposition
- Containment
- Preparation for Disposal
- Transport
- Ensuring TSD Receipt

Closure Certification
- Records
- Reports

Specific discussions and guidance for each of these areas are provided in the following paragraphs.

Material Removal are all efforts oriented specifically to removing all hazardous wastes, waste constituents and residues from the facility which are not intended to be left behind after closure. This must include demolition materials, piping, and tankage. Decontamination measures,

efforts to demonstrate clean closure and final condition of the facility upon closure must also be discussed.

Sampling activities must be directed to proving to Ecology and EPA that no hazardous materials (wastes, constituents and residues) will remain after closure of the tanks.

Analysis represents all of the different tests that will be performed to demonstrate that hazardous materials are not left after closure. It must also include chain of custody and QA/QC procedures.

Remediation provides a description of the efforts that will be undertaken to actually remove hazardous materials from the facility and remediate those areas where hazardous materials are not intended to remain. It will specify where and when analysis to check for clean closure will be performed. It will also specify worker, equipment and other decontamination procedures that will be followed.

Facility Reclamation should address all of the efforts that will be undertaken to return the facility to the appearance and uses of surrounding areas.

Materials Staging and Disposition should address all activities associated with containing and preparing, for final disposition, the wastes generated during closure. These materials will include concrete demolition debris, emptied tanks, and steam jets. The methods of transport, disposal practices, estimated volumes of hazardous materials to be disposed of, and disposal verification should be addressed.

Containment should describe how the various forms of containment (e.g., tank) will be provided for different types of hazardous materials (including contaminated equipment) while closure is conducted. Hazardous waste containment procedures must be followed unless the wastes are shown to not be hazardous.

Preparation for Disposal will involve arranging for a disposal facility to receive the hazardous materials generated during closure.

Transport should provide a discussion of how off-site transport and disposal will actually be accomplished for materials that will be shipped off-site.

Ensuring TSD Receipt is primarily a matter of checking the hazardous waste manifests (or other documents if only on-site transport is involved) to confirm that the receiving TSD facility has accepted the hazardous materials.

Closure Certification will address those final activities necessary to document and demonstrate that the closure plan was followed and that the closure performance standard has been satisfied.

Records should be sufficient to technically support the certification of closure that must be submitted to the regulatory agencies.

Reports will essentially be all written communication with Ecology and EPA necessary to certify that closure has been performed in accordance with the approved closure plan and that the closure performance standard has been met.

The owner/operator must maintain the closure plan to ensure that it is current and accounts for the anticipated closure activities. The owner/operator must submit a request for modification of the permit to amend the closure plan when the facility operations change and change the closure procedures or the closure schedule changes.

Post-Closure Requirements

A dangerous waste TSD facility must comply with the post-closure requirements if hazardous waste remains at that facility after closure at levels in excess of the clean closure criteria. Post-closure is a period of time (typically 30 years) after closure during which certain caretaking activities must occur. The regulations are directed toward land disposal units such as landfills where the dangerous wastes are anticipated to remain after the facility is shutdown. However, certain surface impoundments, tanks, and waste piles also need to have contingent post-closure care even though it may be the intent to remove all wastes at closure.

Intent of Post-Closure The general intent of the post-closure care period is to allow for the detection of failures in the waste containment system after the facility has been closed. Such failures could be indicated by, for example, excessive cap settling, groundwater contamination, or increasing leachate in the collection system. During the post-closure care period, the owner/operator must ensure that the facility's post-closure monitoring and maintenance activities are performed in a manner that will allow for detection of failures (and incipient failures) in the land disposal unit(s). Post-closure use of the property must not disturb the integrity of the waste containment system (e.g., liners, caps) or the monitoring systems.

Notification Requirements When a land disposal unit or facility is closed, two notices must be given. The first required notice is a notice, including a survey plat, to the local land authority, and to Ecology and EPA. The second required notice is a notice in the deed to the property. The basic purpose of these notices is to ensure that the presence of hazardous wastes at the site is identified to future users and purchasers of the property, and to prevent potential disturbance of the disposal units by future activities at the site.

Post-Closure Plan Requirements

The primary device for ensuring that the closed land disposal units are not disturbed, that monitoring is continued, and that maintenance of the closed unit(s) is timely and appropriate is the post-closure plan. The post-closure plan must be submitted to Ecology and EPA as part of the facility's permit application and, upon approval, becomes a condition of the permit. The plan must describe in detail the activities that will be conducted during the post-closure care period, and must address the specific post-closure requirements for each type of unit (e.g., waste pile, landfill).

For each disposal unit at a facility, the post-closure plan must identify the activities (and frequency of those activities) that will be conducted after closure of the unit. The plan's contents must include at least:

- Descriptions of the planned groundwater monitoring activities and frequencies;

- Descriptions of the planned maintenance activities and frequencies to ensure:

  - Integrity of the containment structures (e.g., cap);

  - Function of the facility monitoring equipment; and

- The name, address, and phone number of the person or office to contact regarding the unit or facility during the post-closure care period.

The post-closure plan must be followed until the end of the post-closure care period. At the end of post-closure care for each disposal unit, the owner/operator must submit to Ecology and EPA a certification that post-closure care was performed in accordance with the post-closure plan.

When preparing the post-closure plan for a unit or facility, the owner/operator should consider all of the activities that are likely to be necessary to actually provide post-closure care for the unit or facility. The following activities should be considered and, as appropriate, addressed in the plan.

Monitoring and Inspection
- Leachate
- Groundwater
- Containment System Integrity

Maintenance and Corrective Measures
- Containment Systems
- Monitoring Systems

The following paragraphs provide brief discussions of the types of considerations to include when addressing these activities in the post-closure plan.

Monitoring and Inspection should identify all activities necessary to detect escape of hazardous wastes, constituents or residues into the environment, and to detect any breakdown in the integrity of the containment systems or the monitoring systems. Containment systems include liners, caps, covers, and in the case of land treatment units, the treatment zone itself.

Leachate may be generated during the post-closure care period. The leachate collection system should be inspected for excessive leachate generation, failure of the leachate removal system, or other related problems that could indicate loss of hazardous materials (wastes, constituents, or residues) to the environment.

Groundwater monitoring must be conducted during post-closure. The post-closure plan should be in compliance with the state and federal groundwater monitoring regulations. Inspection of the monitoring wells and

locations should be conducted to ensure that they are maintained in good condition.

Containment System Integrity should be monitored and inspected to detect failures when they occur, and to identify signs of incipient failure so that preventive efforts can be undertaken prior to failure. Signs of potential failure to look for include: excessive settling of the cap; excessive erosion or loss of vegetation; damage to the cap from burrowing animals or plants; and, for land treatment, unexpected changes in the treatment zone.

Maintenance and Corrective Measures should specify the actions that will be taken in the event that the containment systems fail or may be failing, that the monitoring systems are not operating correctly, or that monitoring indicates potential escape of hazardous materials to the environment.

Containment Systems should be corrected if signs of failure or incipient failure occur, and should be maintained to prevent failure from becoming a potential problem. For example, maintenance and corrective measure for the containment systems might include: maintaining the vegetative cover; maintaining any security systems in place; replacing soils lost through erosion; and even digging up an entire cell to replace the liner system.

Monitoring Systems should be corrected if problems occur that compromise their operation, and maintenance and corrective measures should be planned for in the event that the monitoring systems indicate release of hazardous materials to the environment. For example, consideration should be given to what actions will be taken if: the leachate detection system fails; or, the groundwater monitoring system detects hazardous constituents.

APPLICABILITY

Active tanks and the Cell 4 container storage area at B Plant have been identified as TSD units in the Part A permit application. Thus, the tanks

and container area must be properly closed when they are taken out of service in accordance with a written closure plan.

INFORMATION REVIEWED AND CURRENT STATUS

The current status of the B Plant closure plan was determined through interviews of the facility personnel.

Closure plans for B Plant tanks and the container storage area have not been developed.

CONCLUSIONS AND RECOMMENDATIONS

- (Closure Plan) Prepare a closure plan for active tanks and Cell 4 located at B Plant. Since the tanks and Cell 4 have secondary containment, a contingent post-closure plan is not required. All piping connected to the tanks must be included in the closure plan. Other points to consider in the plan are:

  - How to accommodate radioactivity while performing the closure;

  - How to decontaminate or demolish and dispose of the thick concrete structure without spreading any contamination that might be on the concrete;

  - Chemical testing of the concrete and ancillary structures to determine "clean closure" or to determine the level of contamination for disposal purposes; and

  - Confirmation sampling and testing of the soils beneath the cell floors to show that contamination has not passed through the floor.

FINANCIAL REQUIREMENTS
40 CFR 265 SUBPART H

REGULATIONS AND REQUIREMENTS

Dangerous waste TSD facility owners/operators must demonstrate that they have sufficient financial assets to ensure that the facility can be properly closed and, if necessary, and properly maintained during post-closure. The documentation required can include certificates of insurance, proof of self insurance or sufficient liquid financial assets. In addition, owners/operators must have insurance for their facilities to cover accidents, releases, and other incidents.

The regulations specifically exclude federally owned facilities from the financial requirements. It has been assumed that governmental agencies have sufficient financial ability to properly close their TSD facilities, pay for post-closure care where necessary, and cover costs arising from unexpected incidents. Since the Hanford Site is a federally owned facility, it is exempt from the TSD financial requirements.

APPLICABILITY

The B Plant facility is located on the Hanford Site which is owned by the U.S. Department of Energy. Since it is owned by the federal government, it is exempt from the financial requirements.

CONCLUSIONS AND RECOMMENDATIONS

- (Regulations and Requirements) Although not a requirement of the regulations, development of a closure cost estimate is recommended to facilitate federal budget acquisition prior to closure. In addition, current state regulations require operators at federal facilities to comply with the financial requirements under final status.

USE AND MANAGEMENT OF CONTAINERS
40 CFR 265 SUBPART I

REGULATIONS AND REQUIREMENTS

Containers and container areas that are used to store or treat dangerous wastes must satisfy certain minimum standards. Containers are defined as portable devices in which dangerous wastes are treated or stored. Thus, items such as tank trucks and tank trailers, as well as typical drums, are considered containers. The regulations apply to both containers and container areas.

The requirements for containers and container areas include standards for:

- Container integrity;
- Compatibility between the container and the waste(s);
- Handling or management of the containers;
- Inspection of the containers and container area;
- Management of ignitible, reactive, or incompatible wastes in containers;
- Labeling of the containers; and
- Secondary containment.

Container Integrity

Containers used to handle dangerous wastes must be in good condition. The container should not be damaged structurally and should be relatively free of corrosion. Other types of distress that must be prevented include dents, pitting, punctures, and separation of seams. Containers that

experience these kinds of distress, leak, or are otherwise unable to contain the wastes safely, must be emptied of dangerous wastes and not used until sufficiently repaired.

Waste/Container Material Compatibility

Wastes handled in the containers must be compatible with the container. Contact between the container and the wastes can not result in excessive heat, fire, explosion, or any other reaction that will damage the container. Similarly, the wastes must be compatible with the materials of construction of the container area itself. For example, if a particular waste generates toxic gases when it comes into contact with concrete, the floor of the container area should not be constructed of concrete.

The waste analyses plan demonstrates that the container/waste compatibility requirements are satisfied. It should show that the wastes, the container materials, and the container area materials are compatible. The facility operating procedures should include what particular type of containers should be used for each type of dangerous waste generated at the facility.

Management of Containers

Containers handling dangerous wastes must be managed to prevent damage to the container and prohibit release of the waste from the container. Specifically, the regulations require that containers be kept closed at all times except when waste is being added or removed. The lids of the containers should be secured so that if the container were to tip, wastes would not spill. Other practices which are consistent with these requirements include:

- Place drums vertically rather than horizontally so that the drum is more stable and not able to roll;

- Elevate containers off of the floor so that liquids will not accumulate around the base of the container;

- Stack drums no greater than 2 high to reduce the potential for the drums to become unstable and fall; and

- Protect container storage areas from damage by objects such as fork-lift trucks by using barriers or fences.

Inspections

Containers and container areas must be inspected at least weekly for leaks, spills, corrosion, or container distress. The inspection program should include inspection checklists which give detailed, complete guidance to the inspector regarding what specific items are to be inspected and what they are to be inspected for. The checklists should also consider the specific area to be inspected. For example, an inspection checklist for a container area where drums are stacked in steel racks should include checking for rust or corrosion of the racks and cracks in the metal which may result in failure of the racks and falling of the containers.

The inspection checklists must be maintained in the operating file. The inspection logs, checklists, and other records should be of sufficient detail to allow an inspector to quickly determine that the facility is satisfying the container and container area inspection requirements.

Ignitible, Reactive, or Incompatible Wastes

Containers that handle ignitible or reactive wastes must be managed in accordance with special requirements for such types of wastes. The regulations specifically require that containers holding ignitible or reactive wastes be placed at least 50 feet from the facility property line. The wastes must also be handled in a manner that prevents the ignitible or reactive wastes from igniting or reacting. This includes keeping the containers away from open flames or other sources of heat.

Incompatible wastes are not to be mixed together in a container. Dangerous wastes are not to be placed in a container that once held an incompatible

waste unless the container is washed or unless the wastes placed in the container will not generate uncontrolled reactions, fumes, heat, etc. In addition, containers which contain incompatible wastes must be stored in areas that are separated by a dike, berm, or other device that prevents the mixing of the incompatible wastes.

In general, the storage or treatment of ignitible, reactive, or incompatible wastes in containers must adhere to the requirements of WAC 173-303-395, Other General Requirements.

Labeling

The Washington State addenda to interim status container requirements include specific requirements for labeling of containers handling dangerous waste. The containers must be marked with a label which notes the contents of the container and the risks associated with the wastes.

Secondary Containment

The Washington State dangerous waste regulations present secondary containment requirements for interim status container areas. These requirements are considered addenda to the federal Subpart I requirements.

Container areas that were constructed or installed prior to September 30, 1986, are required to have secondary containment. Furthermore, existing container areas that the regulatory agency believes present a potential threat to public health or to the environment can be required to have secondary containment by the agency. A history of releases from the containers or repeated nonconformance with the container regulations are typical justifications for the agency to require secondary containment for existing container areas.

Secondary containment for container areas typically consists of an impervious floor with impervious curbs. The materials used to construct the containment area must be compatible with the wastes handled in the

containers. Secondary containment areas must be protected from run-on. In other words, rainfall, snow melt, or other water must be prevented from flowing in to the containment area. Similarly, the containment must have sufficient volume to contain the rainfall from a 25-year, 24-hour storm without allowing the precipitation to flow out of the containment area.

Liquids accumulated in the containment area must be removed in a timely manner. If accumulated precipitation is drained out of the containment area, the draining should occur only after the accumulated liquid is determined to be non-dangerous. The drainage valve should be maintained in a locked position and only opened to drain non-dangerous liquid.

APPLICABILITY

B Plant has been identified as a TSD container storage facility in the Part A permit application. Thus, B Plant must satisfy the container and container storage area standards. Furthermore, some of the dangerous wastes stored at the facility are ignitible or reactive and thus, the facility must satisfy the container requirements for ignitible or reactive wastes.

INFORMATION REVIEWED AND CURRENT STATUS

The current status and condition of B Plant containers and container areas was determined through interviews with facility personnel and review of various documents and drawings supplied by WHC.

Cell 4 is concrete and is approximately 27.5 feet long, 13 feet wide, and 20 feet deep. The cell has been modified for the storage of non-liquid, radioactive materials and dangerous waste that have been packaged in WESF. Although secondary containment is not required for container storage areas constructed prior to September 30, 1986, the concrete containment area is

anticipated to be compatible with the wastes and of sufficient capacity to contain the contents of a failed container.

Most of the documentation reviewed for this assessment includes packaging activities conducted at WESF. WESF is not included in the B Plant Part A permit application and is not included as part of this assessment.

The Part A permit application for B Plant includes the following dangerous waste that may be stored in containers in Cell 4:

- Mercury vapor light bulbs (EP Toxic for Hg);
- Sodium vapor light bulbs (reactive); and
- Lead and chromium based paints (ignitible and EP Toxic for Pb and Cr).

The Part A permit application specifies that the design capacity of Cell 4 is 300 gallons. However, plan drawings of Cell 4 indicate that the cell is designed to contain a maximum of 180 55-gallon drums. This equals approximately 9,900 gallons.

Waste containers are standard 55-gallon, DOT 17C steel drums with 15 mil polyethylene liners. Drums are inspected prior to filling with waste to ensure they are in good condition. The containers are anticipated to be compatible with the wastes.

Drums are filled in WESF using remote techniques. Sharp objects are placed into a bucket before loading into the container to prevent a drum or liner puncture. The procedures specify that only dry wastes are to be loaded into drums. However, the procedures do not specify criteria for determining what is dry. For instance, the containers can accept waste paints. The Part A permit application lists these wastes as ignitible. In order for a solid paint to be ignitible it must either be classified as an oxidizer per 49 CFR 173.151 or it must be capable, under standard temperature and pressure, of causing a fire through friction, absorption of

moisture, or spontaneous chemical changes. We are not aware of any paints that, when allowed to dry to the solid phase, would meet the definition of an ignitible solid. In addition, procedures are not available for ensuring the waste paints are dry prior to loading into a drum.

A waste drum loading data sheet is filled out at WESF for each drum filled. These sheets specify the drum contents and the weight of each item. In reviewing the data sheets submitted for this assessment it is questionable whether any dangerous waste is currently being stored in Cell 4. Most of the items consist of gloves, cardboard, rings, etc. The data sheet for drum 979 contains a Lucalux light. It is not known if this light is a sodium or mercury vapor light.

Prior to transporting containerized wastes from WESF to Cell 4 at B Plant, the containers are stenciled with a drum number and remotely placed into a cask with lead shielding. Detailed procedures are provided for transporting the containers to B Plant. Once the drums arrive at B Plant they are staged on Cell 6 cover block and the drums are removed from the lead shielded cask. The drums are then placed into Cell 4. The crane operator at B Plant logs the location of each drum placed into Cell 4 by drum number. The crane operators log was not readily available and was not reviewed as part of this assessment.

Cell 4 is designed to contain drums in metal racks stacked to a maximum of five drums high. The racks are designed to keep containers from falling and to support the weight of overlying containers. Plan drawings specify that the storage racks and the "new concrete slab" are to be coated with "special protective coating SPC-1 per HWS-8951". The characteristics of the coating and the purpose of the "new concrete slab" are not specified in the material submitted for review.

Monitoring equipment in Cell 4 includes pressure, temperature, and heat indicators. Fire protection is supplied by an overhead sprinkler system. The floor of the cell is sloped to a gravity drain that appears to have been plugged according to plan drawings. In conversations with B Plant

personnel it was learned that the drain has a manually controlled drain valve and an alarm system that alerts the operator if liquids are present. Written procedures are not in place to remove accumulated liquid to prevent water from contacting the bottom of the lowest level of drums.

Routine inspections are not conducted weekly after the drums are placed in Cell 4. In addition, sufficient access is not provided to inspect all containers in the cell.

The containers are not marked with a label which notes the contents of the containers and the associated major risks.

CONCLUSIONS AND RECOMMENDATIONS

- (Regulations and Requirements) Although not specifically required by the regulations, pull together all container storage records and procedures into a set of documents specific only to B Plant. This will make it easier for WHC and agency inspectors to review container storage compliance items.

- (Regulations and Requirements) Resolve the apparent discrepancy between the design capacity listed on the Part A and the design of Cell 4 documented in the plan drawings.

- (Management of Containers) Specify criteria for determining what constitutes a dry waste. Document whether or not waste paint is dry (i.e., will it pass the paint filter test?).

- (Management of Containers) Specify the characteristics of the "special protective coating SPC-1 per HWS-8951" and describe the function of the "new concrete slab" in the facility dangerous waste records.

- (Management of Containers) Prepare written procedures to ensure that liquids do not accumulate in the cell containment area to a point where the containers are impacted.

- (Inspections) Conduct weekly inspections of the container storage area and provide sufficient access to all containers to allow for inspection. Alternatively, apply for a waiver to the RCRA weekly inspection requirements for containers. Note in the waiver narrative the conflict between RCRA inspection requirements and the ALARA requirements. In addition, note that no liquids are stored and that the design of Cell 4 is such that a damaged container is unlikely and would not pose a threat to human health or the environment.

- (Ignitible, Reactive, or Incompatible Wastes) Verify the designation of the waste paint as ignitible (See Section WAC 173-303-395 for additional comments).

- (Labeling) Label all dangerous waste containers noting the contents of the containers and the major risks associated with the wastes.

TANKS
40 CFR 265 SUBPART J

REGULATIONS AND REQUIREMENTS

State and Federal Regulations

Tanks which handle dangerous wastes are currently regulated under Washington State Regulations (WAC 173-303-200 and -400). Federal regulations (40 CFR Part 265 Subpart J), promulgated since Washington incorporated state-specific tank standards, present much more stringent tank requirements. Since the State of Washington has been authorized to administer its own dangerous waste program, most of the more stringent federal tank regulations will not apply in Washington until the state incorporates the new standards into the state regulations.

To remain authorized, Washington must (within about two years) include in its regulations tank standards which are at least as stringent as the federal standards. If the state fails to adopt the federal tank standards, they would automatically go into effect in about two years, regardless. Thus, the more stringent federal tank regulations were considered in this assessment.

Specific standards are presented for the following aspects of dangerous waste tank systems:

- Design and construction standards for new tank systems;
- Assessment of existing tank systems;
- Secondary containment;
- Spill and overflow protection;

- Inspections;
- Responses to leaks or spills;
- Closure and post-closure requirements; and
- Particular requirements for ignitible, reactive, or incompatible wastes.

Design and Construction of Dangerous Waste Tank Systems

New tank systems which are constructed under interim status are required to adhere to specific design, construction, and installation standards. These requirements apply only to new tanks placed into service under interim status. The requirements are not applicable to existing dangerous waste tanks.

New tank systems which are constructed under interim status must adhere to specific design and construction standards. The primary design standard is that the tank system must be designed in accordance with one of the nationally recognized tank design standards. These standards have been developed by national professional groups such as the American Concrete Institute (ACI), the American Petroleum Institute (API), and the American Iron and Steel Institute (AISI). Other design requirements of new dangerous waste tank systems include:

- Detailed corrosion potential analyses and design by a corrosion expert;
- Consideration of external loads such as vehicular traffic;
- Adequate foundation support for the system; and
- Documentation of compatibility between the materials of construction and the waste in the tank system.

The regulations require that the owner/operator ensure that the tank system is properly installed without damage. The system must be inspected after placement, and before covering, for signs of potential distress. After inspection and prior to being placed in service, the tank system must be tested for tightness. Other installation requirements include:

- Proper backfill materials and techniques;
- Proper support of ancillary equipment; and
- Documentation that the system was constructed and installed as designed and in accordance with the tank regulations.

Assessment of Existing Tank Systems

Existing tank systems without secondary containment must be assessed for structural integrity and satisfaction of the tank requirements within 1 year of the effective date of the regulations. For tanks handling non-radioactive dangerous waste at the Hanford Site, the assessment deadline has passed. If these tanks do not have secondary containment and have not been assessed, then they are out of compliance. Tanks that contain radioactive dangerous wastes only recently became regulated under the federal standards and must be assessed during the current calendar year.

The purpose of the assessment is to determine if an existing tank without secondary containment is suitable for continued use under the new tank regulations. At a minimum the assessment must address the following:

- Design standards used in the original design of the tank system;
- Compatibility between the materials of construction and the wastes handled in the tank;

- Results of a leak test or an internal inspection of the tank. For underground, non-enterable tanks and for ancillary equipment, a leak test is required;

- Corrosion protection system, if one exists;

- Documented age of the tank system; and

- Ancillary equipment.

The assessment must be reviewed and certified by an independent, registered professional engineer.

The assessment must include sufficient amount of detail so that an agency reviewing the assessment can determine if (1) the tank was sufficiently assessed and (2) if the tank is fit for continued service. For example, an inspection of a tank should include ultrasonic testing of the tank walls, checking for cracks in the roof, walls, floors, and around fittings, testing welds, checking for loose fittings, testing the corrosion protection system, etc. Each component of the assessment must be documented in detail.

Secondary Containment

All tanks that handle dangerous wastes must have secondary containment, eventually. The specific date by which secondary containment must be provided depends on the age of the tank. Tanks constructed after the effective date of the regulations must have secondary containment. Existing tanks must have secondary containment within two years of the effective date or when the tank is 15 years old, whichever is later. Until secondary containment is provided, existing tanks must be leak tested or visually inspected each year in accordance with the assessment requirements noted above.

Typical secondary containment systems for tanks include the following:

- Vaults (e.g., canyon cells) in which the tank sites;
- Double wall tanks with interstitial monitoring;
- Impermeable liners; and
- Concrete bases with berms.

Ancillary equipment must also be provided secondary containment. However, the following types of ancillary equipment are not required to have secondary containment if the equipment is inspected daily:

- Non-pressurized above-ground piping;
- Welded connections;
- Seal-less or magnetic-coupling pumps; and
- Pressurized above-ground piping that has automatic shutoff devices.

Typical secondary containment systems for ancillary equipment includes:

- Impermeable trenches;
- Jacketed pipes; and
- Double wall pipes.

The secondary containment system must be constructed with materials that are compatible with the wastes. The containment system must also be able to support the weight of any wastes which may be contained as well as external loads.

The secondary containment system must include a leak detection system which is capable of detecting the presence of a release within 24 hours. The

leak detection system can consist of automatic sensing devices or simply a program of daily visual inspection. Automatic leak detection systems include:

- Thermal conductivity sensors;
- Electrical resistivity sensors; and
- Vapor detectors.

These sensors should be connected to an alarm system which, when initiated, alert the facility personnel that a release has occurred.

Spill and Overflow Prevention

Dangerous waste tanks must have spill and overflow prevention devices. Proper practices during transfer of wastes to and from the tank are also required. The regulations allow some flexibility in the specific types of spill and overflow prevention devices used on specific tanks. Spill and overflow prevention devices include:

- Level sensors and gages;
- High and low level alarms;
- Automatic shutoff devices for feed lines;
- Bypass systems;
- Curbing, paving, and catchment facilities at loading and unloading areas; and
- Use of dry disconnect and ball valve systems.

Level sensors can range from simply noting the liquid level on a marked ruler in the tank to automatic electronic devices which provide a continuous record of the liquid level. Any type of level sensing system is acceptable if it effectively prevents overflowing of the tank. For example, if manual visual methods are used for level monitoring, the facility operating procedures should include how often the tank level is to be checked, who is responsible for checking it, and what actions should be undertaken if excessive level are noted. The times when the level is checked should be directed toward those times when the tank is being filled or emptied.

High and Low Level Alarms High and low level alarms are considered part of the spill and overflow prevention system on dangerous waste tanks. The alarms are commonly integrated with the automatic level sensing devices and initiate when a predetermined high or low level is noted by the level sensor. Alternatively, the alarm systems can be separate from the level sensor and consist of a simple float switch.

Automatic Cutoffs An automatic cutoff system should stop all feeds to the tank when the tank is full. Generally this is accomplished by integrating the cutoff system with the high level alarm and level sensing systems. For example, an integrated system consists of one where upon noting a high level condition in the tank, the high level alarm is sounded and pumps feeding the tank are automatically shut off. Another type of automatic cutoff system is one where all pumps are shut down in the event that a release is detected. This type of cutoff system is typically integrated with the release detection system in the secondary containment system. Automatic shut down of pumps in the event of a sudden loss of pressure in the piping, as would be expected if a major piping failure has occurred, is another type of automatic cutoff system.

Bypass Systems A bypass system is necessary when a tank or ancillary equipment becomes inoperable and must be bypassed to complete or safely shut down the process. A sufficient number of redundant tanks and ancillary equipment should be provided so that wastes can be routed around

failed equipment safely. The bypass system can be integrated with the level sensing, high level alarm, and release detection systems so that the wastes are rerouted in the event of a high level condition or a release to the secondary containment system.

Delivery Areas where wastes are transferred to tanks using nonpermanent connections (i.e., hoses from a delivery truck) should be paved and bermed to prevent the release of any spills to the environment. The areas should have a sump where any spills or overflows are collected and returned to the tank. Such sumps should have a release detection system and be constructed of waste compatible materials. Connections in the delivery system should be designed to minimize the amount of wastes spilled when disconnecting from the tank.

Inspections

Inspection Program Dangerous waste tank systems must be inspected on a regular basis. Specifically, the following items must be inspected at least once during each operating day:

- Overfill and spill control equipment;
- Above-ground portions of the tank and ancillary equipment;
- Leak detection and other monitoring data; and
- Area around the tank and secondary containment system.

Corrosion protection systems must be checked within 6 months of their installation and annually thereafter. Sources of impressed current used in the corrosion protection system are required to be checked bimonthly.

Inspection of the spill and overflow prevention system should include:

- Level sensing devices;

- o High and low level alarm systems;
- o Automatic cutoff systems; and
- o Bypass systems.

Each of these systems should be checked for proper operation daily. Although it is not required to actually test each system daily, some method of confirming daily that the systems are properly operating should be developed. Periodic (although not necessarily daily) testing of the alarm and cutoff systems should also be performed.

The above-ground portions of the tank system must be inspected daily for signs of corrosion or release (or potential release) of wastes. This inspection is directed toward checking the tank structure and ancillary equipment for distress such as leaks, cracks, buckles, bulges, discoloration, etc. Valves, pipes, fittings, hoses, pumps, and compressors should also be checked daily for:

- o Leaks;
- o Corrosion;
- o Excessive vibration or swaying;
- o Foundation cracks;
- o Leaky seals;
- o Safety equipment; and
- o Sufficient lubricating oil.

Data gathered from monitoring equipment should be reviewed at least daily. The data should be checked for evidence of a release (or potential release)

of waste to the environment or to the secondary containment system. The data should also be checked to verify that the system is operating properly. Monitoring data that should be included in the daily inspection includes:

- Leak detection sensor data;
- Level indicator data;
- Temperature and pressure data; and
- Flow rate data.

The area around the tank system must be checked daily for evidence of releases of dangerous wastes or erosion. Such evidence includes wet spots or dead vegetation around the tank system. Other items to check for include erosion around the base of the tank and the secondary containment system or erosion in a dike surrounding the tank.

All of the inspections are required to be detailed and consider all portions of the tank system. It is not sufficient to simply state that "the tank system will be inspected". Rather, inspection of the above items should include checking specific features of the tank system for specific types of distress or evidence of distress.

Documenting the Inspection Program The inspection program that addresses the above requirements should be developed and documented as part of the facility operating procedures. Inspection checklists and logs should specific, detailed guidance to the inspector. For example, instead of simply stating "Check tank for distress", the daily inspection checklist for the inspection of the above-ground portions of the tank system should say;

> "Check Tank 25-1, the feed and outflow piping, pumps 101 and 102, and the secondary containment vault for:

- o Cracks;
- o Corrosion;
- o Discoloration; and
- o Excessive vibration or noise."

The detail and completeness of the inspection checklist should allow an inspector to immediately note that the inspection program satisfies the inspection requirements for dangerous waste tanks.

The inspection checklists and logs from past inspections should be maintained in the facility operating record. The logs should note the date of the inspection, the inspector's name, and the results of the inspection. If any items requiring attention were disclosed as a result of the inspection, the log should note what actions were taken.

Response to Leaks or Spills

The dangerous waste tank regulations require specific responses to leaks or spills. The responses in the tank regulations are unit-specific addenda to the response procedures in the Emergency requirements documented in the contingency plan. The required responses to a leak or spill from a tank system include:

- o Cessation of use, stopping flow into the tank;
- o Removal of wastes from the tank (if the tank is leaking) and/or removal of the wastes from the secondary containment system;
- o Containing visible releases to the environment;

- Repair of the tank system; and

- Reporting.

The failed portion of the tank system should be isolated from the other portions of the system by use of the bypass system. Thus, if a leak occurs in a tank, the level of wastes in the tank should be lowered to a level below the hole in the tank. The regulations note that such waste removal must be accomplished within 24 hours of detection of the release or at the earliest practicable time if it is not possible to do so within 24 hours. The removal of wastes also applies to waste released to, and contained in, the secondary containment system.

The response to a leak or spill must also include steps to immediately contain and cleanup any visible releases to the environment. Containing the release may include construction of temporary berms or closing channels to catch basins. Cleanup of visible releases could include excavation and disposal of contaminated soil or decontamination of the secondary containment system.

If the leak or spill was the result of the tank or ancillary equipment failing, the equipment must be repaired or replaced before returning to service. Major repairs and replacements must be certified as being accomplished in accordance with the dangerous waste tank design and construction requirements by an independent, registered professional engineer. If the release was from an underground, non-enterable tank, secondary containment must be provided to the tank prior to returning it to service.

If the quantity of wastes released is greater than 1 pound or if the release is not immediately cleaned up, the release must be reported to the regulatory agency within 24 hours. Within 30 days of a release to the environment, a report summarizing the following must be submitted to the regulatory agency:

- Migration route of the released wastes;
- Characteristics of the surrounding area including population, surface waters, drinking water supplies, soils, and hydrogeology;
- Results of monitoring; and
- Description of response actions.

Closure and Post-Closure

When a dangerous waste tank is permanently removed from service, it must be closed in accordance with specific tank closure requirements. The tank-specific closure requirements are addenda to the general dangerous waste closure requirements presented in 40 CFR Part 265 Subpart G. Thus, a closure plan must be developed for the tank system.

Closure of a dangerous waste tank must include either complete removal of all contaminated equipment and materials or the tank must be closed as a landfill and be subject to post-closure care requirements. Post-closure requirements include financial assurance, groundwater monitoring, inspection, and maintenance. Closure plans for tanks must include closure as a landfill as a contingency closure procedure in the tank closure plan. As discussed in the guidance for the general closure requirements, the closure plan must describe, in detail, the specific steps that will be taken to properly close the tank system.

Ignitible, Reactive, or Incompatible Wastes

Dangerous waste tanks are not allowed to handle ignitible, reactive, or incompatible wastes unless the wastes are:

(1) Made non-ignitible, non-reactive, and compatible prior to, or immediately after, entering the tank; or

(2) Handled in a manner that prevents the wastes from igniting or reacting; or

(3) The tank is used solely for emergencies.

The specific requirements under which (1) or (2) are required to be accomplished, as well as the general requirements for facilities handling ignitible, reactive, or incompatible wastes, are presented in WAC 173-303-395, Other General Requirements.

Tanks which handle ignitible or reactive wastes must be located a minimum distance from public ways, streets, and adjoining property lines. The specific distance requirements are presented in the National Fire Protection Code and depend on the type of tank, the size of the tank, and the nature of the material handled in the tank.

Labels

The state dangerous waste regulations provide addenda to the federal dangerous waste tank labeling requirements. The state regulations note that dangerous waste tanks must be marked with a label that notes the contents of the tank and the risks associated with the wastes. The label must be legible from at least 50 feet.

APPLICABILITY

The Part A identifies all tanks in B Plant as treatment or storage units. This was done to include the NCAW process, planned for the early 1990s, in the Part A permit application. Currently, the only identified TSD activities occurring in tanks at B Plant are for storage as follows:

- Storage of NCAW waste (corrosive, toxic, and EP Toxic) in tanks 6-2, 8-1, 8-2, 13-1, 39-2, and 39-5;

- Storage of used organic solvents (toxic) in tanks 26-1, 27-3, 27-4, 28-3, 28-4, 29-4, and 30-3; and

- Potential treatment of spilled NCAW waste in tanks 24-1, 25-1, 25-2, and E-23-3 concentrator.

Per agreement with WHC personnel this tank assessment will only address the tanks listed above that are currently storing waste and the E-23-3 concentrator system which may be used to reduce the volume in the event of a spill of NCAW waste. These active units, and the potentially active E-23-3 concentrator system, must comply with the interim status dangerous waste tank standards.

INFORMATION REVIEWED AND CURRENT STATUS

The current status and condition of the tanks was determined through interviews of facility personnel and review of various drawings and documentation provided by WHC.

Due to radioactive concerns it was not possible to directly observe the interior of the cells which contained the active tanks and ancillary equipment at the time of the site visit. Photographs of the cell interiors were examined for tanks 6-2, 8-1, 8-2, 13-1, 24-1, 39-2, 39-5, and E-23-3 concentrator.

Currently, approximately 8,700 gallons of NCAW and 6,350 gallons of organic wastes are being stored in B Plant. This situation is not anticipated to change prior to 1990 when research and development activities for the planned NCAW process may commence.

All tanks are constructed of stainless steel. Ancillary equipment such as piping are either constructed of stainless steel, rubber, or synthetic material resistant to corrosion from the wastes. Tank and ancillary

equipment are anticipated to be compatible with the organic and NCAW wastes at B plant.

All tank systems at B Plant contain high and low level indicators and alarms, pressure indicators, and temperature monitors. An automatic cut off system is in place to shut down the flow from tank 24-1 (feed tank to E-23-3 concentrator) when the high level alarm is initiated in tank E-23-3-1. None of the other dangerous waste management systems currently in use have automatic cut off systems.

As stated earlier, no active treatment processes are operational at this time. If, for some reason, one of the storage tanks needs to be emptied, procedures are in place which require that operators monitor sending and receiving tank conditions during transfer. This includes verification that the total volume sent to the receiving tank is actually received.

Tank level (volume) is calculated from data provided by the tank contents weight factor and specific gravity. These parameters are measured and presented on recorders in the operating gallery. High and low weight factor alarms are also present. The alarm initiates both an audible and visual warning.

The tanks are located within cells beneath the B Plant canyon and are covered with 6-foot-thick concrete cover blocks. The 6-1/2-foot-thick reinforced concrete cell floor provides secondary containment for the tanks and ancillary equipment (e.g., jumpers and piping) contained in each cell. The concrete containment area is anticipated to be compatible with the waste.

Each cell has a heat detector to indicate rising temperature within the cell. When activated, an alarm will sound in the dispatchers office. A water spray system can be manually activated if the temperature in the cell indicates a fire. Cells containing organic waste have two heat detection devices. If both devices are activated the foam spray system is automatically activated.

Additional secondary containment is provided for piping by the concrete hot pipe trench within B Plant. Access can be gained to the hot pipe trench by removing a 4-1/2-foot-thick concrete cover block. This hot pipe trench contains piping that would be used to transfer waste from a tank in one cell to a tank in another cell. In that no active treatment is currently occurring the hot pipe trench is inactive for dangerous waste. If a tank failed and residual waste had to be transferred to another tank then the hot pipe trench would be used. Secondary containment is provided for existing tanks and ancillary equipment. Thus, a tank integrity assessment is not currently required for tanks at B Plant. However, under recently adopted state requirements, tanks under a final status permit are required to have integrity assessments.

The hot pipe trench is currently used to transfer radioactively contaminated water being condensed in the E-23-3 concentrator system. This water consists of steam condensate that collects in cell containment areas. This water is not known to be regulated as a dangerous waste.

Liquids that drain to the cell floors and liquids that may collect in the hot pipe trench drain by gravity to a common collection line that terminates at tank 10-1. The common collection line is located below the base of the canyon cells. It is encased in a 4-1/2-foot square of reinforced concrete. The common drainage system is not accessible and does not contain leak detection or other monitoring equipment. Weekly, the line is evaluated for leaks by discharging a known volume of water to the line and determining if the entire volume arrives at tank 10-1. Small leaks in the line may not be detected using this procedure.

If the common drainage system line were to leak it would either remain in the annular space between the line and the concrete, flow through cracks (if present) in the surrounding concrete and, potentially, enter the underlying soils, or flow in the annular space and discharge into tank 10-2. Plans are being considered to apply a resin coating to the drain line as added protection against leaks.

The air tunnel is used to produce negative air pressure within the cells to keep radioactive constituents within the cell canyon to a minimum. The air tunnel is connected to each cell by a hole through the concrete. In general, these holes enter the process cells approximately 10 feet above the bottom of the cell. Approximately 16,000 gallons of liquid would need to collect in a cell before it would flow into the air tunnel. This capacity is larger than any single active tank at B Plant. The air tunnel drains by gravity to tank 10-1 through a dedicated drainage system. The air tunnel is not accessible and does not contain leak detection or other monitoring equipment except for heat detectors located at the entrance and exit of the tunnel. However, it is not reasonably anticipated that a cell would overflow into the air tunnel. Even in the event of a fire it is not likely that the liquid level would exceed 10 feet in a cell because of the gravity drainage systems in each cell. Thus, the air tunnel is not considered a secondary containment system for B Plant tanks.

Tank 10-1 is a 10,000-gallon stainless steel, open top tank that is used to accumulate drainage from the cells, the hot pipe trench, and the air tunnel. Tank 10-1 does not store waste longer than 90 days and no treatment occurs in this tank. Thus, it is not a TSD unit under current operations. It would act as part of the spill containment system to receive NCAW or organic waste if a spill or leak occurred in any of the active storage units.

Under worst case conditions tank 10-1 would overflow into the surrounding cell, designated tank 10-2. Overflow into tank 10-2 has no drainage system and must be jetted to another tank. If a major spill or fire occurred it would be possible for liquids in tank 10-2 to flow up the common drainage system and enter the railroad cell which would provide additional secondary containment.

Overflow into tank 10-2 could cause tank 10-1 to float due to the lack of tie down devices. Standard procedures are to jet liquid out of tank 10-2 before removing liquid from tank 10-1. This procedure is designed to lessen the chances of floating tank 10-1. If tank 10-1 were to float there

is a possibility of damaging the jumper to the tank 10-2 jetting devices and possibly other equipment in Cell 10. Procedures and contingencies are not in place to address potential floating of tank 10-1.

Procedures are not available to instruct the facility operators as to what to do if a spill of NCAW or organic waste were to occur. Organic waste would not go to the E-23-3 concentrator, however, this is not documented in writing. No contingency plans have been formulated for organic waste spill response. Spilled NCAW waste may or may not be treated in E-23-3 concentrator and it may or may not go to Tank Farms. No contingency plans have been formulated for NCAW waste spill response.

The concrete containment areas and spill collection system is expected to be compatible with the wastes currently being stored at B Plant. The corrosive NCAW waste has a pH of over 13 and the organic waste is not expected to cause corrosion of the concrete. Expansion joints in the concrete cells are located within the walls to reduce the possibility of corrosion from waste contact. Expansion joints in the concrete may or may not have been damaged over the years.

Cracks extending through the 6-1/2-foot-thick containment floor are not likely. However, B Plant has been in existence since 1945 and has operated as a bismuth phosphate separation facility for removing plutonium and uranium from irradiated fuel and as a facility for removing cesium and strontium from Hanford wastes using a combination of precipitation, solvent extraction, and ion exchange steps.

Inspections of the process cell and hot pipe trench containment areas are difficult due to high radioactivity and are not being accomplished at this time. We are not certain of the condition of the concrete containment areas which could have been corroded or otherwise damaged from past or current activities. Due to the lack of inspection, the integrity of the containment areas is unknown.

All cells are equipped with automatic leak detection devices. Leak detection devices are not provided in the hot pipe trench nor in the air tunnel.

The tanks are not labeled per the labeling requirements.

Tanks that are permanently removed from service are transferred to the burial grounds. This is not accomplished in accordance with a written closure plan.

Materials (i.e., products) currently in use at B Plant consist of sodium hydroxide and sodium nitrite used to treat wastes going to tank farms in order to meet their acceptance criteria. These materials are anticipated to be compatible with the wastes being stored at B Plant.

Occasionally, B Plant personnel will decontaminate a tank or other item prior to sending it to the burial grounds. Various decontamination solutions are currently being used, including Turco (Registered Trademark), phosphoric acid, and nitric acid. The acid-based decontamination solutions may not be compatible with the high pH NCAW wastes being stored at B Plant. If NCAW waste and acid decontamination solutions were allowed to commingle, an uncontrolled reaction could occur. Under current operations the commingling of NCAW and acid decontamination does not appear likely because the NCAW waste is in static, enclosed storage and decontamination of equipment is infrequent. In addition, storage of acid products is in the AMU storage area and is not adjacent to NCAW storage tanks.

Inspections of tank monitoring equipment are accomplished once per shift. Inspection procedures do not include instruction on how to determine if monitoring equipment is operating properly. Documentation supplied to us did not include instructions for inspecting leak detection systems in the cells. In addition, current tank inspection logs do not provide a place for documenting that discrepancies noted during the inspection have been corrected.

Most of the emergency procedures for active tanks at B Plant have not been written down. For instance, there are no written procedures for removing wastes from a leaking tank or repairing a leaking tank and there are no dedicated tank systems to receive wastes that need to be removed from existing storage tanks. If NCAW or organic wastes were to spill, the facility does not have written procedures for what to do with the spilled waste. For the most part, the operators rely on experience (i.e., common knowledge) and if something occurs, they plan what is to be done after the fact.

CONCLUSIONS AND RECOMMENDATIONS

- (Regulations and Requirements) Although not specifically required by the regulations, pull all items relevant to the tank standards out of existing documents and place in a hazardous waste operating file.

- (Secondary Containment) Provide verification that the secondary containment systems for B Plant are in sound condition and are not leaking. This verification is to include cell containment areas, hot pipe trench containment areas, transfer lines to Tank Farms, and the common cell collection line containment areas. This verification can include visual inspection and/or an evaluation of the design of the secondary containment structures and the thickness of the concrete showing that failure of the secondary containment areas due to past and current practices is not likely. Implementing the plan to resin coat the common collection line would assist in this verification.

- (Spill and Overflow Prevention) Provide leak detection for the hot pipe trench and transfer line to Tank Farms.

- (Response to Leaks or Spills) Provide detailed written procedures for all reasonably conceivable spill scenarios related to active tanks at B Plant.

- (Response to Leaks and Spills) Evaluate the need to address potential floating of tank 10-1. If it is determined that such an event would damage the integrity of the tank, or associated ancillary equipment, provide procedures and/or engineered devices to alleviate the problem.

- (Inspection Requirements) Provide for daily inspection of the tanks, containment structures, and ancillary equipment or apply for a waiver to the RCRA daily inspection requirements for the tanks and ancillary equipment. Note in the waiver narrative the conflict between the RCRA inspection requirements and the ALARA requirements.

- (Inspection Requirements) Include <u>all</u> tank instrumentation data in the daily facility inspection program. Calculate and record the tank and sump levels, alarms initiated, and any other data available from the tank instrumentation. Include a place in the inspection record to document what was done to correct discrepancies and when they were corrected. Such practices will aid in the acceptance of inspection waiver application discussed in the previous recommendation.

- (Closure and Post-Closure) Provide a closure plan for TSD tanks that are removed from service. Detail tank and ancillary equipment decontamination, removal, staging, transportation, and TSD acceptance procedures in the plan per 40 CFR Part 265 Subpart G requirements.

- (Labeling Requirements) Place labels identifying the tanks, the contents of the tanks, and the major risks associated with the wastes on the exterior of the cover blocks.

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