
3.0 STORAGE TANK ASSESSMENT

3.1 Tank Assessment Methodology

Item 1.c.vii of Exhibit A requires that ENSR compile a current inventory of storage tanks at the Metachem facility and conduct an assessment of the secondary containment systems provided for these tanks. Item 1.c.xi of Exhibit A also requires that ENSR review the current tank inspection program implemented by Metachem and confirm that this program is consistent with current industry standards.

To compile this inventory and complete these assessments, ENSR conducted site walks of the Metachem facility to identify all raw material, product, intermediate and waste storage tanks and visual inspection and field measurement of secondary containment systems. Engineering files were reviewed to obtain design and construction details for these tank and containment systems. Additional information was obtained through interviews with Metachem production, engineering and environmental staff.

ENSR conducted these site walks on June 27 - 29, 2001 and August 3, 2001.

3.2 Storage Tank Inventory

Metachem provided a storage tank inventory and storage tank location drawing for initial review by ENSR. This information was verified by a Professional Engineer during the site walks.

A comprehensive inventory of all storage tanks at the Metachem facility, as verified during this audit is provided as Table 3. The storage tank design, installation, and use information was generated from the information obtained during the site walks, file reviews, collection of field measurements and from discussions with Metachem personnel. The facility site map provided as Figure 1 shows the locations of each storage tank and is based on the observations made during the site walks. The grid locations of facility storage tanks, as noted on Figure 1, are cross-referenced in Table 3.

Metachem's files include limited details regarding installation or modification histories for these tanks. At the time of ENSR's evaluation, an effort was underway to consolidate all related records maintained by other departments (e.g., Instrumentation, Production, Maintenance) within the Engineering Files. This effort was not complete. Therefore, the installation data provided on Table 3 is based upon limited information available from a review of these Engineering Files or as provided from other department personnel.

3.3 Secondary Containment Assessment

ENSR conducted an additional site walk on August 3, 2001 to assess the secondary containment integrity and capacity provided for each tank identified on table 3. Field measurements of secondary containment structures were obtained manually by ENSR using a tape measure. These measurements were used to calculate the capacity of each secondary containment structure in order to evaluate the adequacy of the secondary containment. Visual observations were made (e.g., cracks in concrete, deterioration, etc.) of each secondary containment structure to evaluate the integrity of the containment. Table 3 contains the results of the secondary containment evaluation, including information on the secondary containment capacity of each tank and the structural integrity evaluation results.

3.4 Tank Inspection Program Review

Item 1.c.xi of Exhibit A requires that ENSR evaluate Metachem's tank inspection program for consistency with those inspection criteria and recommendations prepared by the American Petroleum Institute, the National Fire Protection Agency, the Steel Tank Inventory, the American National Standards Institute, the American Society of Testing and Materials, and Underwriters Laboratories. One or more of these standards are expected to serve as the basis for development and implementation of a tank inspection and management program.

Based upon the information obtained from Metachem regarding the construction and function of each storage tank, ENSR has determined that only the following industry standards reviewed were applicable to development and implementation of a storage tank inspection program:

- American Petroleum Institute (API) 653, Tank Inspection, Repair, Alteration, and Reconstruction (Second Edition, December 1995) – This standard provides the minimum requirements for maintaining the integrity of welded or riveted, nonrefrigerated, atmospheric pressure, aboveground storage tanks after they have been placed in service. It covers the maintenance inspection, repair, alteration, relocation, and reconstruction of such tanks.
- Steel Tank Institute Standard for Inspection of In-Service Shop Fabricated Aboveground Tanks for Storage of Combustible and Flammable Liquids, dated September 2000 – This standard covers the inspection of shop fabricated steel tanks built to a nationally recognized standard for aboveground storage tanks that are intended for the aboveground storage of noncorrosive, stable, flammable, and combustible liquids having a specific gravity not exceeding that of water.
- API Spec 12P – Fiberglass Reinforced Plastic Tanks (Second Edition, January 1995) – This standard covers the minimum requirements for material, design, fabrication, and testing of fiberglass reinforced plastic tanks

ENSR determined through a review of facility files and interviews with Metachem personnel that a formal and documented facility tank assessment program was not being implemented. Visual observations of the exterior of the tanks are conducted daily during operations hours.

During the file review, a draft Non-Pressure Tank Management Standard, dated June 4, 1996 as prepared by Standard Chlorine of Delaware, Inc. was found. The plan provided details on the design, fabrication, repair, and inspection of non-pressurized storage/process tanks at the site. The draft plan was not being implemented at the time of ENSR's evaluation. Review of facility files also revealed records of tank inspections and ultrasonic test inspections conducted in 1992. Records of inspections were not, however, available for all storage tanks. One record of an ultrasonic test inspection was dated 1999. Therefore, it appears that a tank inspection program was continuously in progress during 1992 with one documented inspection in 1999. The tank inspection program implemented during 1992 reflected a tank inspection and assessment program that was developed in accordance with storage tank industry standards. A more up-to-date tank inspection and management plan should be developed to reflect the current tank inventory and facility operations.

3.5 Relationship to Other Regulatory Obligations

Civil Action No. 88-11 JLL, executed December 14, 1987 between DNREC and Standard Chlorine of Delaware, Inc. includes requirements for maintenance and inspection of facility storage tanks. Section II, Item 11 requires that all storage tanks be visually inspected on an annual basis and subject to nondestructive testing every three (3) years. The results of these inspections and tests must be recorded. This action does not specify which tanks are subject to this testing. Similarly, the action does not specify the scope or methodology to be used for each annual inspection. Based upon ENSR's review of records provided by Metachem and interviews with facility personnel, nondestructive tests have not been conducted and the current inspection program includes only visual observation of tank exteriors.

Similarly, one or more of the WPCC permits listed on Table 4 requires that the covered storage tanks be regularly inspected and/or subject to nondestructive testing. As discussed in Section 5 of this report, ENSR has confirmed with the Division of Water Resources that these permits must be maintained. The relevant WPCC permits reviewed by ENSR that require routine inspection and testing of storage tanks are as follows:

- WPCC 3082/77 – 700 Series Tanks (tank numbers not specified): Inspections of tank conditions, foundations, dikes, valves, pipes, supports, automatic sump pumps and record of corrective actions completed every six (6) months. The inspection is to be recorded and records are to be retained at the facility.

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- WPCC 307/86 – 400 Series Tanks (tank numbers not specified): Annual inspections of tank conditions, foundations, dikes, valves, pipes, supports, automatic sump pumps and record of corrective actions completed. The inspection is to be recorded and submitted to the agency within 30-days of completing the inspection. Nondestructive ultrasonic testing must be conducted every three (3) years and a copy of the report submitted to the agency.
 - WPCC 3045/86 – Tanks 450, 451, 452, 453, and 454: Annual inspections of tank conditions, foundations, dikes, valves, pipes, supports, automatic sump pumps and record of corrective actions completed. The inspection is to be recorded and submitted to the agency within 30-days of completing the inspection. Nondestructive ultrasonic testing must be conducted every three (3) years and a copy of the report submitted to the agency.
 - WPCC 3083/87 - Tanks T-62, T-63 and T-64: Annual inspections of tank conditions, foundations, dikes, valves, pipes, supports, automatic sump pumps and record of corrective actions completed. The inspection is to be recorded and submitted to the agency within 30-days of completing the inspection.

Based upon a review of facility files and interviews with facility personnel, these inspections and tests are not conducted and reported as required per these permits.