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Safety Analyses for Environmental Restoration Activities at Hanford

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SAFETY ANALYSES FOR ENVIRONMENTAL RESTORATION ACTIVITIES AT HANFORD

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PRESENTATION SUMMARY

Restoration activities have inspired innovative safety analyses preparation based on a multidisciplinary team focusing on identifying and controlling hazards to assure operational safety, checking the controls to assure regulatory compliance, and lastly, producing a final document. The results are successful in establishing line ownership and timely completion of the safety analysis document, assuring timely approval and authorization, and continued operational safety.

APPROACH

The team approach successfully applied at the Hanford Site combines the assurance that the customer receives the support needed for operational safety and approval to operate with the technical adequacy of analyses and documentation. The approach used begins with decisions regarding the work scope, and the hazard inventories and energies. These are then discussed with the regulators to assure their general agreement. Once general agreement is achieved on the approach, plans and schedules can be designed to provide management and regulators with the means of progress tracking. The plans are developed by a team of individuals with the appropriate expertise. The team continues to function in an advisory role to line management until final approval is obtained.

One important step in the team approach is the early incorporation of safety analyses into the development of the activity work plans and system designs. This approach helps ensure that the safety goals and objectives are included in all stages of the activity from conception to completion.

Recommendations from the team typically include regulatory inferences regarding a design or activity work approach (an aid to decision making), secondary hazard formation (cautions and potential controls), and prudent actions that help demonstrate Westinghouse Hanford Company's goals of safer, more efficient operations. The active role of the team during the early decision making phases of an activity promote a sense of ownership and reduce misunderstandings that can lead to conflicts of position. Regulatory compliance reviews occur more smoothly and find fewer deficiencies with less impact with this approach than when the activity decisions are made without an analyzed safety basis incorporating regulatory inferences.

METHODS

The current method employed is to obtain or assist the line organization in developing basic inputs to the safety analysis. The first basic input is the radiological and toxicological inventory. If specific inventories are unknown, qualitative analyses are used to develop recommendations for a bounding inventory. The goal is to limit the inventory if possible, thereby limiting the controls necessary to assure safe operation. Time, area, quantity and concentrations are considered. Other basic inputs include siting (proximity to other facilities and the public), work scope, work approach (e.g., shovel, bulldozer or explosives), and the duration of the activity.

Once the basic inputs are established, a "hazard map" is developed as a communication tool to aid in discussions with the customer, regulators and company management. The hazard map is a simple graphic depiction of the activity work approach that shows the relative hazards and energies at the major stages of the activity. In the early stages of planning an activity, the map is qualitative and general. In later stages, if warranted, the information can become more quantitative with respect to consequences as long as the map is kept simple (i.e., an aid to communication).

As the activity decision process progresses, changes and refinements in the information occurs. These changes, additions, and refinements require that the hazard identification and consequence analysis be an iterative process periodically checking to ensure the baseline data remains valid or is changed accordingly. The team checks the changes in an open forum with each individual providing perspectives from their area of expertise. These shared perspectives provide better recommendations and aid in achieving team understanding.

A regulatory compliance verification is conducted as a final step before writing the document. Each identified hazard is reviewed against the appropriate regulations to assure both the appropriate and compliant controls are in place to provide the safety functions required. Team notes and meeting minutes are reviewed by the team to assure agreement of earlier decisions made regarding compliance, innovations and justifications of items not included.

A report is drafted as the final step in the process. The team notes, meeting minutes and hazard maps provide a collective memory reference from which to draft a succinct report. The information in the draft report is arranged in the format the reviewer/approval authority desires to aid in their review and approval.

In conclusion, this "return to basics" method and approach results in a team understanding and consensus during the development of the safety analysis, a strong sense of engineering and operations ownership, and finally, management acceptance of the analysis. The approach also helps foster open discussion between team members that often leads to innovative ideas. In addition, preparation costs tend to be less than 5% of the total activity cost while still supporting expedited schedules. The overall team approach is compatible with the new culture of the graded approach.

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