

Advisory Board on Toxic Substances and Workers' Health

QUESTIONS FOR PARAGON PRESENTATION ON SITE EXPOSURE MATRICES (SEM) AT BOARD MEETING, NOVEMBER 15-16, 2023

1. Which organizational entity is responsible for providing changed status for decommissioned or additional facilities – is that a Department of Energy responsibility, Department of Labor responsibility or Paragon's responsibility to monitor the various Sites' changing facility status? One newer facility, covering 65 acres at Hanford to vitrify 56 million gallons of waste out of 158 underground tanks, containing 1,800 unique chemicals – not to mention their chemical mix complexities (with an operational 10-year contract of \$45B) is not in the SEM. Additionally, in review of SEM facilities, it is noted that some major facilities that have been decommissioned are still showing as operational and no new labor categories such as D&D workers, no new work processes, and no new toxics have been identified in the SEM.

DOL Response: Paragon Technical Services (PTS), with DOL oversight, is responsible for making changes in the SEM. PTS coordinates with DOL on the prioritization and scheduling of SEM site profile updates. PTS is currently in the process of updating all the large active DOE operating sites to add new buildings, processes, missions, etc. This began in 2015, with updates on a five-to-seven-year cycle. Since May 2022 under this plan, seven active DOE sites have been updated, five are currently under revision, and nine are planned for revision between October 2023 and the end of this SEM contract period in April 2025. In the intervening periods updates occur when significant changes to facilities occur. Other priority updates include developing an enhanced security guard generic profile to add potential exposure to area toxins, updating the 48 DOE sites with specific periods of site remediation based on the duration and dates of the remediation, adding the recently developed remediation generic profile to 16 uranium mills and other targeted updates.

Closure profiles are added only when the operating site is completed, operations cease, and buildings and facilities are decontaminated, decommissioned, and demolished. Currently these profiles only exist for Rocky Flats, Mound, FERNALD, Santa Susana Field Lab (ETEC), and Oak Ridge K-25. For operating sites, remediation is an ongoing process in the site life cycle and these activities are included in the operational site SEM profile. For most of the large active operating sites, the SEM profile includes the remediation worker labor category and the associated work processes. For example, the sites that have these labor categories and work processes include Ames Laboratory, Fermi, Hanford/PNNL, INL, LBNL, LLNL, Nevada Test Site, ORNL, Pantex, SRS, Paducah GDP, and Portsmouth GDP (as Worker, remediation).

Concerning the Vitrification (Vit) Plant at the Hanford Facility, PTS is aware of the Vit Plant and it is planning a significant update to the Hanford profile to occur in the coming months. The Vit Plant is currently beginning the initial process of preparing for the Contractor Readiness Review (RR). The RR will not be completed until sometime in 2024. This is the stage where they finalize work processes as well as procedures, etc. Until the RR is completed, the plant is

not in operation. The Vit Plant will be a major focus once the procedures and processes are finalized and the plant begins operation. The activities at the site involved in the construction of the plant are covered under the current site profile.

2. There is concern that for site or facility closure that a closure spreadsheet is prepared and replaces the operational spreadsheet. Hanford, Y-12 Plant, and gaseous diffusion plants have all identified SEM entries that appear to have been partially deleted – labor categories and identified toxic substances that reflect more historical operations at these facilities. It is of great concern to the Board if that deletion or updating of spreadsheets is removing historical information at any site/plant. Accordingly, would you show the initial operational and pre- and post-closure spreadsheets for several facilities? If you would prefer, we can provide specific facilities from different sites/plants. Additionally, please describe in detail the process for approving deletion or removal of any data from the SEM and who has approval authority within PTS and/or DOL.

DOL Response: The development of a site closure spreadsheet is to enhance and separate site closure operations from facility (production) activities. Closure profiles in SEM **do not replace** the site profiles for the DOE operating sites but only augment this information. The purpose for a closure profile is for SEM users to have information for potential exposures that relate to processes and functions associated with the shutdown of DOE sites. Most sites have had remediation work as part of the normal life cycle of the site and these activities are included in the site profiles. When a site is no longer used in production operations and the entire site is remediated, that site becomes a candidate for development of a closure profile. For the public Internet Accessible Site (IAS) application, the closure profile information is presented under the site name as part of the IAS display. Clicking on the “SEARCHES SPECIFIC TO THE SELECTED SITE” chooses if the user wants site operations activities or closure activities. DOL-SEM has separate profiles for site operations and closure activities because the content of operations and closure are vastly different and therefore the spreadsheets communicate those differences. There are five closure sites in SEM which include the following specific warning for each data set view:

- SEARCHES SPECIFIC TO THE SELECTED SITE -- "Feed Materials Production Center (Fernald) Closure":
[Return to main Feed Materials Production Center profile – all pre-1990 plant operations and basic site services after 1990.](#)
- SEARCHES SPECIFIC TO THE SELECTED SITE -- "Mound Plant Closure - 1995-2010":
[Return to main Mound Plant profile – all pre-1995 plant operations.](#)
- SEARCHES SPECIFIC TO THE SELECTED SITE -- "Oak Ridge Gaseous Diffusion Plant (K-25) Closure - 1988 and beyond":
[Return to main Oak Ridge Gaseous Diffusion Plant \(K-25\) Plant profile – all pre-1988 plant operations and 1988-2020 basic site services.](#)
- SEARCHES SPECIFIC TO THE SELECTED SITE -- "Rocky Flats Plant Closure - 1992-2005":

[Return to main Rocky Flats Plant profile – all pre-1992 plant operations and 1992-2005 basic site services.](#)

- SEARCHES SPECIFIC TO THE SELECTED SITE -- "Area IV of the Santa Susana Field Lab (ETEC)":
[For plant decontamination & decommissioning activities and related exposures in the timeframe 1988 and beyond, refer to the Area IV of the Santa Susana Field Lab \(ETEC\) Closure profile.](#)

The ABTSWH indicated that Hanford, Y-12 Plant, and gaseous diffusion plants have SEM entries that appear to have been partially deleted – labor categories and identified toxic substances that reflect more historical operations at these facilities. The only time information is removed from SEM is in cases where obvious errors are identified. For example, recently we received confirmation that security officers at the Oak Ridge Institute for Science and Education (ORISE) were never armed officers. As a result, we removed the generic profile entries dealing with weapons training and maintenance. Furthermore, based on research conducted by PTS even potential legacy toxic exposures, such as materials banned for use after a certain date such as some of the solvents or refrigerants, remain in SEM. If the ABTSWH can provide any buildings, facilities, or labor categories they believe have been removed, PTS can investigate those cases. PTS coordinates with DOL on issues dealing with the modification of information from SEM. For significant alterations of data communicated in SEM, PTS will notify the assigned DOL Contractor Officer Representative (COR) for input or guidance about the change control. The COR relays the concern through the appropriate DOL authority and once a determination is made within DOL, that information is relayed back to PTS through the COR for action.

3. If DOL has earlier versions of a specific spreadsheet easily retrievable as they have indicated, are those accessible to claimants? If so, how would they get access? Are they available to claims examiners?

DOL Response: Spreadsheets are not accessible to either claimants or claims examiners. The SEM spreadsheets provide the raw data for the SEM relational database to gather data for a specific site, etc. Without the software that comprises the SEM system, the spreadsheets are of little use to claims examiners or others. Moreover, the spreadsheets have restricted access for several reasons, including the protection of Controlled Unclassified Information (CUI) as well as issues involving classification review. In the event DOL staff have a need to review Classified documentation, they are required to have a current, valid Top-Secret clearance. The spreadsheets contain proprietary information and there are DOE classification issues. Providing spreadsheet data that has not been reviewed by the DOE Office of Classification before release would represent a potential security risk. These types of issues are referred to in a classified document, “DOL-10-01669, *SEM Sensitivity Issues* (SECRET, DOE Author), December 21, 2010.” This is the document that delineates how PTS must handle information and protect it when used to inform updates to SEM.

The information displayed in SEM, based on the spreadsheets, is reviewed by the DOE Office of Classification on a semi-annual basis for all the DOE site spreadsheets updated in the preceding six months. The review encompasses any references to updates made to toxic substances and

aliases, buildings and building aliases, work process and aliases, labor categories and aliases, and incidents. They also assess potential mosaic issues, i.e., taking information from two or more unclassified documents and entering it on a SEM spreadsheet such that the result is classified.

In addition to security issues, access to the SEM spreadsheets also pose a concern about propriety information. Under the contract, PTS is responsible for management of SEM. Allowing access to the mechanisms or processes that PTS owns to fulfil contracted obligations represents a competitive risk.

4. Would you describe the process for consolidating “overly large” SEM spreadsheets – please show pre- and post-consolidation for a few spreadsheets?

DOL Response: During an update of the Hanford SEM in 2018, it was discovered that the spreadsheet had grown in size to a point where it was beyond the capability of PTS’s software/hardware to manage. The spreadsheet had become so large it was impossible for the PTS research staff to insert new information or manipulate existing data. PTS assessed that significant file size expansions were often caused by a combination of cell determinants (type size and fonts, bolds, colors, borders, alignments in cells, etc.) that had been extended to the entire set of columns available on the excel spreadsheet (16,384 columns). Therefore, PTS decided on a method to consolidate an overly large document. The step-by-step process is outlined in the attachment below. The process ensures that PTS retains all data in the original spreadsheet, it is organized as intended, and carries over to the revised spreadsheet. The technique to consolidate the memory required/size of individual site spreadsheets has been utilized multiple times since its development in late 2018.



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The ABTSWH requested copies of spreadsheets. As discussed previously, due to classification issues and propriety concerns, the spreadsheets cannot be released.

5. Claims examiners utilize the SEM as part of their claim development. Are these searches independently validated by others/supervisors – and if so, how is that accomplished? Are statistics maintained on incomplete searches or incorrect search protocols?

DOL Response: There are multiple mechanisms applied throughout the life cycle of a Part E claim to validate the accuracy and quality of claim development. In addition to normal routine supervisory quality oversight and quality control, the program has an independent Quality Assurance (QA) team that conducts bi-weekly assessments of decisional outcomes. These reviews evaluate the quality of issued recommended and final decisions. When applicable, the QA team must review the accuracy of SEM data used to inform development about the applicable toxic substances used to reach a claim decision. In addition, a quarterly Quality Assurance Surveillance Program (QASP) is also conducted quarterly that evaluates the quality of the industrial hygiene referral process including the accuracy of SEM data submitted with referrals. QA and QASP produced outcomes measures are provided to program management to

ensure compliance with claim adjudication procedures. In addition to these internal quality control mechanisms, the adjudication process is designed to allow for a claimant or their representative to offer any competing viewpoints or evidence they want considered during the development of their claim, or in objecting to a decision that is not in their favor. This includes the option to offer different search outcome results from SEM, if they believe it supports their position. In addition and depending on the grade and experience level of claims staff, the SEM search result may be reviewed by a claims examiner specialist or unit supervisor. Further, the Final Adjudication Branch (FAB) independently reviews the case record to ensure compliance with policy and procedure which includes routine review of the SEM search result which the district office relied upon in the recommended decision. No specific data is available about the number of incomplete or incorrect search protocols that occur. The program applies a holistic approach that is designed to improve the overall quality of all decisions issued.

6. In review of the SEM for ionizing radiation (as a toxic substance) at Hanford (which would include x-rays, gamma rays, beta, gamma, neutron and alpha), nearly all of aspects of construction (piping/welds/etc), some aspects of decommissioning, and many aspects of job Processes, job categories, and buildings are extremely limited. Could you explain the policy on ionizing radiation (as a toxic substance), recognizing the SEM intentionally does include links from ionizing radiation to a number of diseases.

DOL Response: Although there are references in SEM to radioactive materials (i.e. uranium), SEM is based on the chemical properties of the materials rather than their radioactive properties. The National Institute for Occupational Safety and Health (NIOSH) performs radiation dose reconstructions under Part B of EEOICPA to determine whether the Probability of Causation is 50% or greater that radiation exposure at a covered facility caused a claimed cancer. Under Part E, claims staff would ask a Health Physicist for a health effect opinion pertaining to non-cancer claims involving radiation exposure.

7. If a claim is received that has a diagnosis but no toxic substance is identified in the SEM linked to the stated facility, is the claim denied (as there is no identified link in the SEM) or does the claims examiner have the task to do additional research? Or is the claim denied based on lack of SEM data?

DOL Response: SEM is not a decision-making tool; it is one of many sources claims staff can utilize in adjudicating a claim. There are many programmatic resources available to claims staff to assist them in establishing toxic substance exposure and causation. These include, but are not limited to, SEM, Industrial Hygienists, Contract Medical Consultants, Toxicologists, and a claimant's personal physician. Once the CE has completed development using available programmatic resources, and if the CE is unable to establish a potential relationship between the diagnosed condition (i.e., health effect) and occupational exposure, the CE provides the claimant with an opportunity to submit evidence establishing such a connection.

8. There is significant concern about the impacts of mixtures of chemicals/toxins not being adequately addressed. Would you explain how mixtures are evaluated and included in the SEM?

DOL Response: The Chemical Profile Input Data Form is used for any primary substance for which a profile is completed. Profiles are not completed for trade name substances or mixtures unless the substance is in HAZ-MAP or as specified by DOL policy-driven health effects based on disease links to the specific mixture. Information for trade name substances and mixtures is not readily available except for the potential use of material safety data sheets (MSDS) or safety data sheets (SDS). If such documents can be found, the only information used is the substance name, aliases, and a listing of the constituents by Chemical Abstracts Service (CAS) number if such information is provided. There are often proprietary constituents where such information is not available. For those constituents for which a CAS number has been provided, PTS checks the SEM to see if that substance is already in SEM. If it is not, PTS adds it as a primary substance. When all chemical constituents have been entered in the DOL-SEM database, the primary trade name or mixture, any associated aliases, and CAS numbers for each of the chemical constituents are added to the database. In cases where a CAS number is not provided or found, an entry of “CAS Not Found” may be used. Some examples of mixtures included in SEM with identified health effects include diesel exhaust with links to lung cancer and COPD, and welding fumes linked to 16 health effects.

9. Various sites have questioned the labor categories that are included and not included in various building SEM spreadsheets. Please describe the process for the decision on including/excluding labor categories.

DOL Response: The procedures for entry of labor categories in the SEM database are specified in SOP-SEM-03 and in part provides that:

The Labor Categories (e.g., electrician or chemical operator) are the names of the work groups that perform a work process and/or are potentially exposed to a hazardous substance as indicated in a source document. An entry in the Labor Category column of the spreadsheet is referred to as the Primary Labor Category to distinguish it from the alias titles used in the Labor Category Alias column. If the labor category is identified in a reviewed document but cannot be linked to a documented work process, then judgment is to be used to link the information, but only in cases where the labor category is obvious. For example, if the work process is “Chemistry Laboratory activities” AND there is a job category of “Chemist” at the site, enter “Chemist” in the Labor Category column for this work process. SEM includes all known labor categories in a site’s SEM spreadsheet even if the toxic substance data for the position is unknown. For example, if “researcher” is a labor category at the site and no data is provided about the substances, “researcher” would be entered in the Labor Category column, building number, work process, etc., but the Toxic Substance column left blank. We NEVER assume or guess a labor category title. If the title is unknown, the Labor Category column is blank.

For labor categories that are part of a job family, use the following format applies to the Labor Category column:

- Operator, Chemical and we enter Chemical Operator as an alias.

- Engineer, Mechanical and we enter Mechanical Engineer as an alias.
- Mechanic, Maintenance and we enter Maintenance Mechanic as an alias.

If a general environmental hazard exists to which any worker entering the site could be exposed, we leave the Labor Category, Building #, and Building Title columns blank and insert Work Process information adequate to describe the source of the exposure, e.g., “Building 123 process area stack releases.” Closure spreadsheet generation mirrors the process used for the site operations spreadsheet. Some labor categories performing similar, nonhazardous work tasks are grouped on the spreadsheet to reduce the number of primary labor categories with no or few toxic substances such as Administrative Support, Administrative Staff, Supervisor.

The labor category alias column captures the unofficial names of the work group identified in the Labor Category column and/or official job titles with toxic exposures expected to be similar to the work group identified in the Labor Category column. Example: For an “Electrical mechanic,” electrician might be an unofficial name. In such a case, enter “Mechanic, Electrical” in the Labor Category column and “Electrician” in the Labor Category Alias column. An alias cannot be entered unless linked to a Primary Labor Category.

Official Labor Category titles may have changed at a site over time for several reasons: change in operating contractor, change in bargaining unit representation, change from operations to site closure, change in management approach/emphasis, etc. For job titles that are similar or equivalent (i.e., janitor and custodian, guard and security officer), pick one (arbitrarily if necessary) to remain in the Labor Category column and make the other(s) an alias. Enter an alias title on the spreadsheet only once.

10. What is the process for including incidents in the SEM? Is there a threshold for inclusion of incidents in the SEM – i.e., number of employees involved, amount of exposure, or monetary amount of damage? There are a number of incidents with significant impacts to personnel at Hanford that are not in the SEM.

DOL Response: Reports will sometimes reference accidents and releases involving toxic substances. SEM includes accidents involving a release of a toxic substance. SEM does not include accidents/incidents unless a determination can be made regarding the toxic substance involved, the building or area of the plant where the event occurred, a health impact or fatality resulted, and the date (year only) of the event. In cases where these data cannot be determined, the events with incomplete information are entered on the SEM spreadsheet titled Unknowns worksheet.

Information related to the incident is entered in other columns of the spreadsheet, as applicable. For example, the building number and toxic substance is entered. If the incident was specific to a certain labor group, the labor group is entered. If multiple labor categories were involved, the data for each labor category are entered. If multiple substances are involved in a single incident,

one or two of the most prevalent substances and use in the title, i.e., Uranium and Magnesium Fire, Building M-124, 1960. Every toxic substance involved is NOT used in the incident title. For example, incidents involving construction workers, "Construction Worker" is entered as the labor category in the Incident Title without the construction craft name (e.g., they do not enter Construction electrician or Construction pipe fitter). The construction craft is entered in the Incident Description.