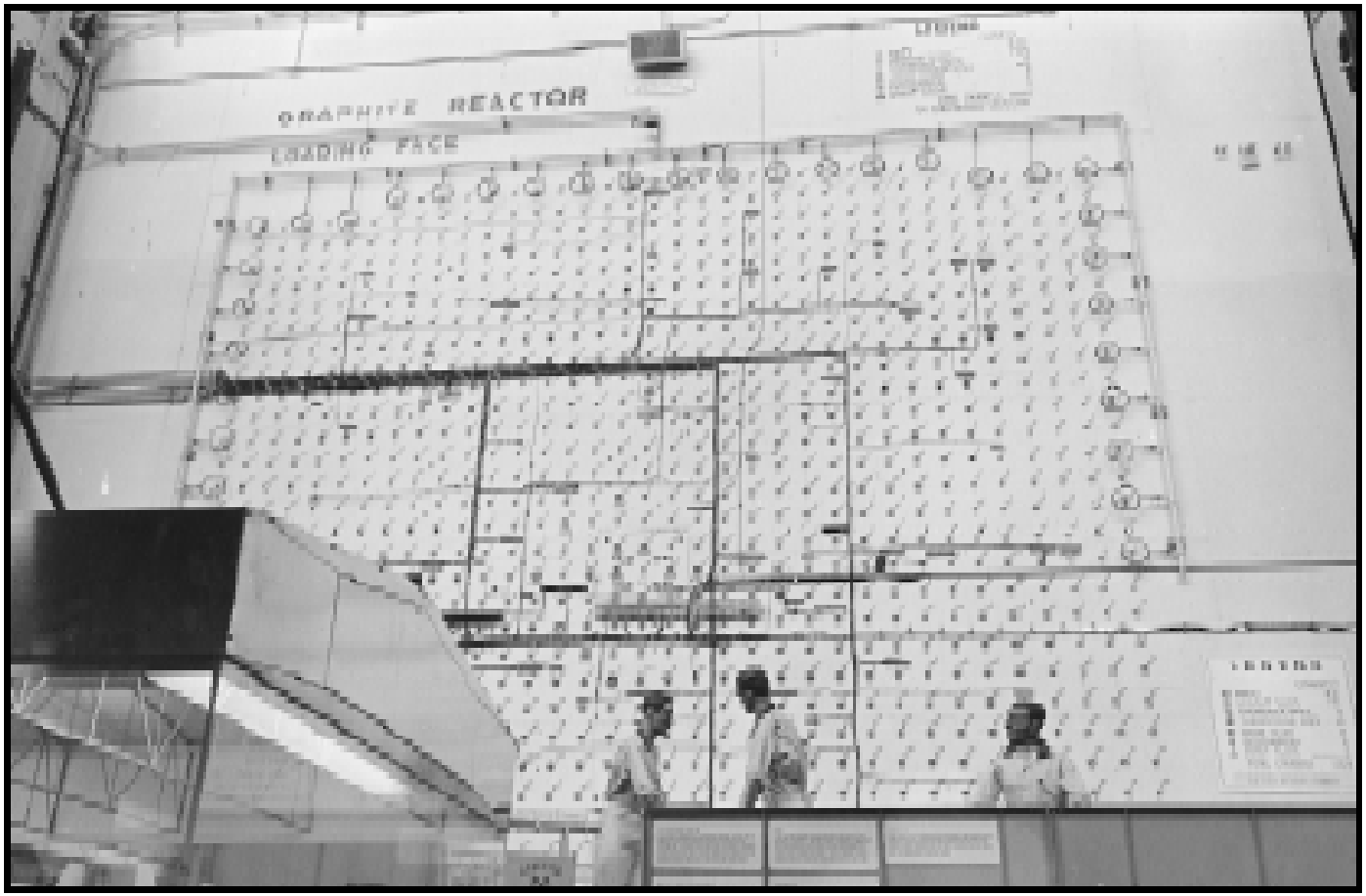
Establishing Exposure, SEM, SOAFs and IH referrals

Spring 2013

K-25 – Exterior

The K-25 Gaseous Diffusion Plant enriched uranium for nuclear weapons and commercial reactor fuel from 1945 until 1987. When first built, the U-shaped K-25 building was one of the largest roofed structures in the world, covering nearly 43 acres. *K-25 Gaseous Diffusion Plant, Oak Ridge, Tennessee. June 12, 1962.*

Reactor at X-10 (ORNL)



The Oak Ridge Graphite Reactor, code-named "X-10," produced the world's first gram quantities of plutonium. It was the pilot plant for Hanford's full-size plutonium production reactors. X-10's core is a graphite block 24 feet on each side. A charging machine inserted fresh uranium metal slugs through holes in the reactor's front face, pushing irradiated slugs out the back. Fans pulled cooling air over the fuel slugs. Oak Ridge scientists used X-10 for research and isotope production until it was decommissioned in 1963. *Oak Ridge Graphite Reactor Historic Landmark, Oak Ridge National Laboratory, Tennessee. June 11, 1982.*

Rocky Flats

Glove Box in use.

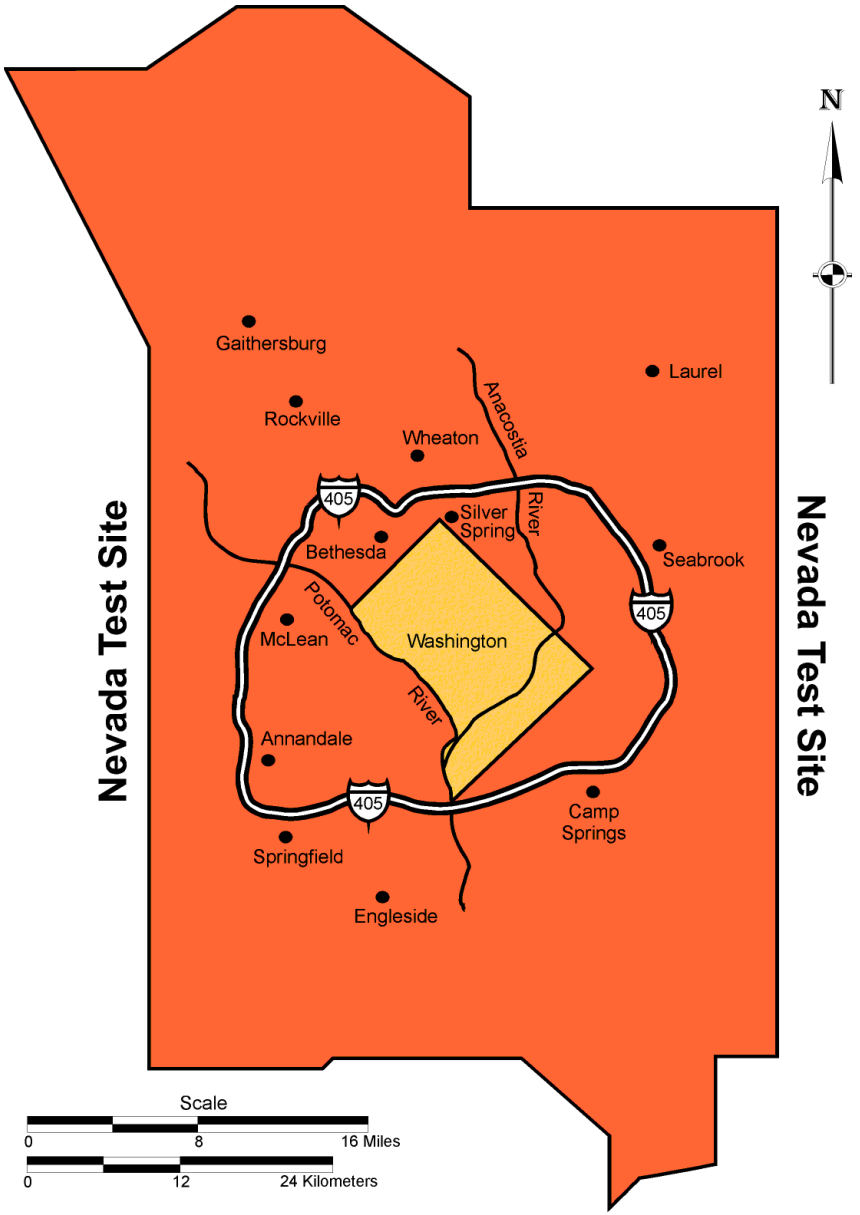
Security, access & compartmentalization

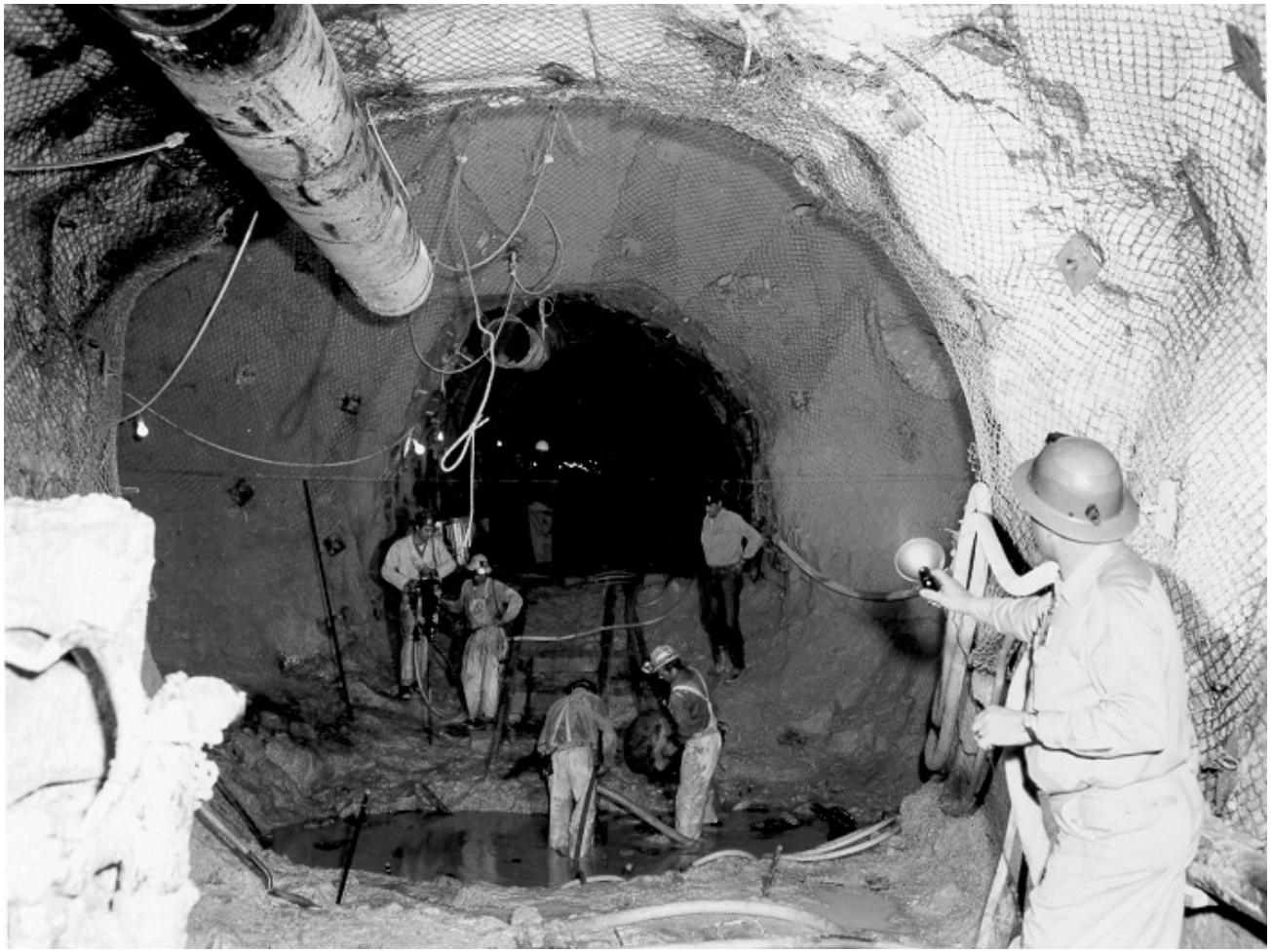
Guard tower and security barriers at the Pantex Plant near Amarillo, in the Texas panhandle. Thousands of plutonium triggers from dismantled warheads are stored in bunkers at the site. *Pantex Plant, Texas. November 18, 1993.*

Size Matters

The NTS is one of the largest restricted access areas in the United States. It occupies approximately 1,375 square miles, and is larger than the state of Rhode Island.

For size comparison, the Washington, D.C. region would only take up part of the NTS territory.





NTS underground construction at N Tunnel, Area 12, November 27, 1967
The device will be placed in this hole and detonated.

Other types of DOE work environments – this one LLNL

Supercomputers like these at Lawrence Livermore National Laboratory are used to analyze and simulate nuclear explosions.
Lawrence Livermore National Laboratory, California. June 13, 1984.

SRS – Control Room

F Canyon Control Room. From this room, operators controlled the processing of irradiated reactor targets. The targets were dissolved in acid so that plutonium could be separated from the uranium and highly radioactive fission product wastes. *F Area, Savannah River Site, South Carolina. January 6, 1954.*

EEOICPA

- Law Enacted October of 2000 - the Energy Employees Occupational Illness Compensation Program Act (EEOICPA)

- Part B
  - Effective on July 31, 2001
  - DEEOIC began providing benefits on July 31, 2001.

- Part E
  - Effective October 28, 2004
  - Replaced the Part D, which was part of the original legislation.

Part E Causation Standard

§ 7385s-4. (c) A Department of Energy contractor employee shall be determined for purposes of this part to have contracted a covered illness through exposure at a Department of Energy facility if—

(A) it is at least as likely as not that exposure to a toxic substance at a Department of Energy facility was a significant factor in aggravating, contributing to, or causing the illness; *and*

(B) it is at least as likely as not that the exposure to such toxic substance was related to employment at a Department of Energy facility.

Elements to proving causation under Part E

- Worked for a contractor at a DOE facility
- Exposed to substance(s) at that facility(ies)
- It is at least as likely as not that exposure to a toxic substance at a Department of Energy facility was a significant factor in aggravating, contributing to, or causing the illness.

Elements to proving causation under Part E

- EXPOSURE assessment -- SEM/IH process
  - To which substances was the employee exposed during work at DOE
  - What is the nature, extent, and duration of that exposure – incidental for two years? Substantial for twenty years?
  - CE has discretion and authority to make these determinations, but IH available for complex scenarios
- CAUSATION Assessment – made by a Doctor.
  - Derived from a reasonable fact-based exposure assessment by Claims Examiner – not a listing of all potential exposures

How does a claimant prove employment-related exposure to a toxic substance at a DOE facility?

- Claimant bears the burden of proof.
- DEEOIC committed to helping claimants meet this burden
  - Multiple resources available to guide development
  - SEM is one resource
- SEM is a tool to help guide case development
  - Used in conjunction with other resources and documentation

Prior to SEM Search, Review case file to form parameters of the search

- Employment (EE-3, EE-5, DAR, OHQ etc.)
  - Acknowledged toxic substance encounters
  - Labor categories worked and number of years employed in each and when
  - Buildings/areas/location worked
  - Incidents/Accidents
- Diagnoses, medical documentation and dates of those diagnoses

Establishing Exposure & IH Referrals

IH Referral Process

- IH referral not always needed
  - CE's have the authority to make determinations on nature, duration and levels of exposure - examples
    - Carpenter – wood dust
    - Welder – welding fumes
    - Roofer & Pavers – benzo(a)pyrene
    - Explosives worker – 4,4'-Methylenebis-(2-chloroanaline) [a.k.a. MOCA]
    - Boiler room or insulator who worked between 1940's through late 1980's with asbestos related disease. It is safe presumption that such an employee would have had significant asbestos exposure in their job.
- IH referral process is available for more complex exposure assessments, but you should be making many of these with the tools you have.

IH Referral Process

- IH referral not always needed
  - CE's have the authority to make reasonable determinations on nature, duration and levels of exposure (dependent on case facts) – examples:
    - Administrative staff /Draftsman - especially since the 1990's, exposure very unlikely
    - Computer operator, clean room working – again exposure not likely
    - Boiler room or insulator who worked between 1940's through late 1980's with asbestos related disease. It is safe presumption that such an employee would have had significant asbestos exposure in their job.

Situations to Avoid

- Avoid referring question to the IH in which you are asking about length, duration or extent of exposure to a substance (for example lead) -- when the employee's diagnosed illness is not linked to that substance (skin cancer, for example)
- IH referral lists based upon building only searches – or all toxins at site are not appropriate.
  - Consider K-25: history of different operations/town-like facility/large buildings/different operations/significant employee movement

Labor Categories

- 199 labor category descriptions available for your assistance on the Z: drive
  - Policies and Procedures Folder
    - Employment information sub-folder
      - JD_Job_Descriptions_v7.pdf.

Job Category

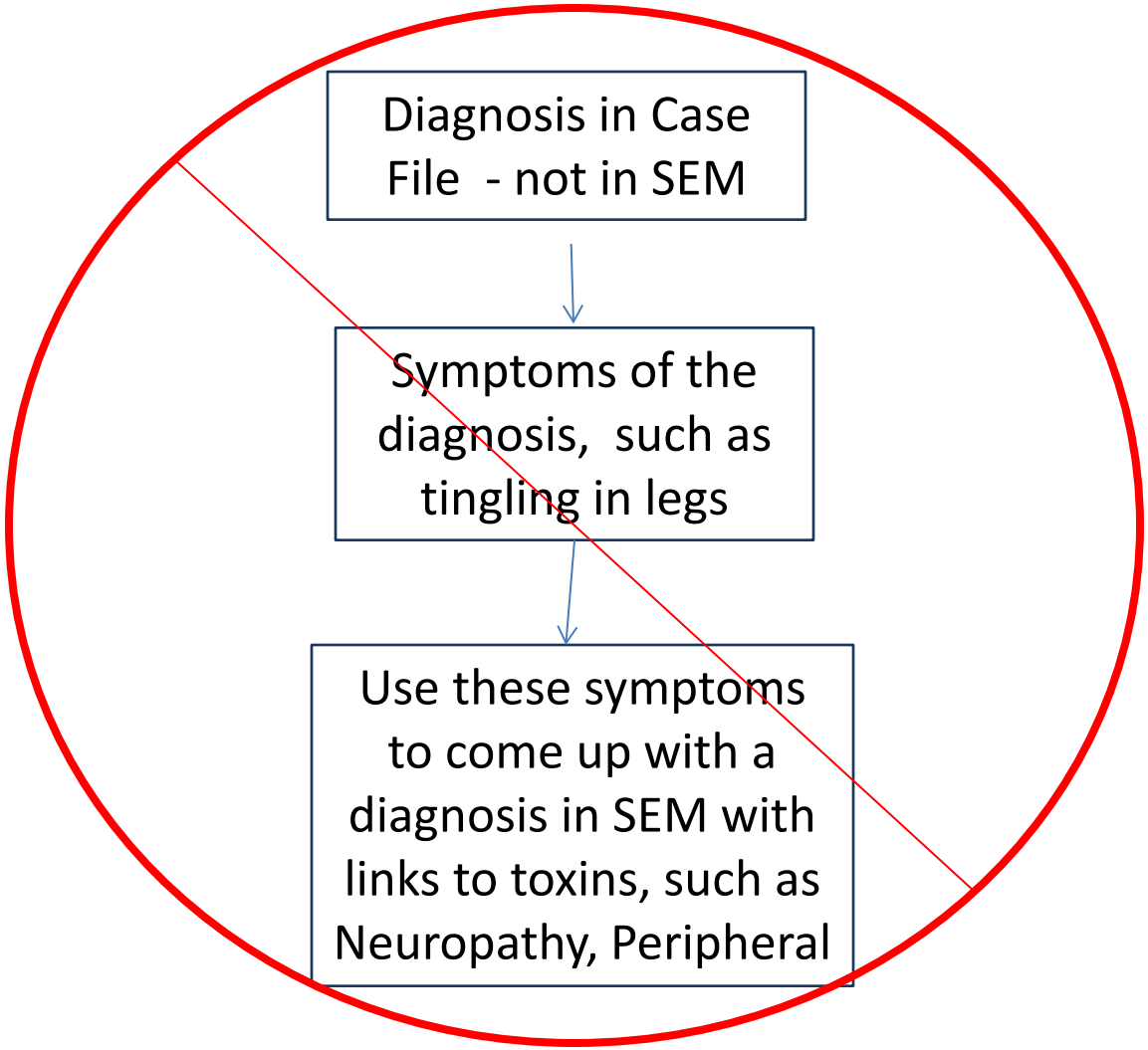
Applicable Job Titles

Type of Work Performed

Boilermakers and boilermaker mechanics make, install, and repair boilers, vats and other large vessels that hold liquids and gases…what they do…equipment they use (acetylene torches)….work is physically demanding and may be done in cramped quarters inside boilers, vats, or tanks that are often damp and poorly ventilated…

	A	B	C
1	Job Category	Applicable Job Titles	Type of Work Performed
11	Boilermaker	Boilermaker Mechanic	Boilermakers and boilermaker mechanics make, install, and repair boilers, vats, and other large vessels that hold liquids and gases. Boilers supply steam and provide heat and power in buildings and factories. Tanks and vats are used to process and store chemicals, oil, fuels, and other products. Following blueprints, boilermakers locate and mark reference points on the boiler foundation using straightedges, squares, transits, and tape measures. Boilermakers then attach rigging and signal crane operators to lift heavy frame and plate sections and other parts into place. Sections are aligned using plumb bobs, levels, wedges, and turnbuckles. Boilermakers also use hammers, files, grinders, and cutting torches to remove irregular edges so that edges fit properly, which are then bolted or welded together. Boilermakers align and attach water tubes, stacks, valves, gauges, and other parts and test complete vessels for leaks or other defects. Refractory brick and other heat-resistant materials are installed in fireboxes or pressure vessels. Usually, boilermakers assemble large vessels temporarily in a fabrication shop to ensure a proper fit before final assembly on the permanent site. Boilermakers often use potentially dangerous equipment, such as acetylene torches and power grinders; handle heavy parts; and work on ladders or on top of large vessels. Work is physically demanding and may be done in cramped quarters inside boilers, vats, or tanks that are often damp and poorly ventilated. In some instances, work may be done at high elevations for an extended period.
12	Bookkeeper (Ore Buying Station)	Ore buying Station Bookeeper	A person who keeps track of samples sent to the lab in Grand Junction and the assays when they are received. The bookkeeper also keeps track of the tons and grade of each stockpile. Only at Monticello are the stockpiles moved directly to the mill, when the mill is operating.

Aliases are not to be used to change the diagnosis in the file:



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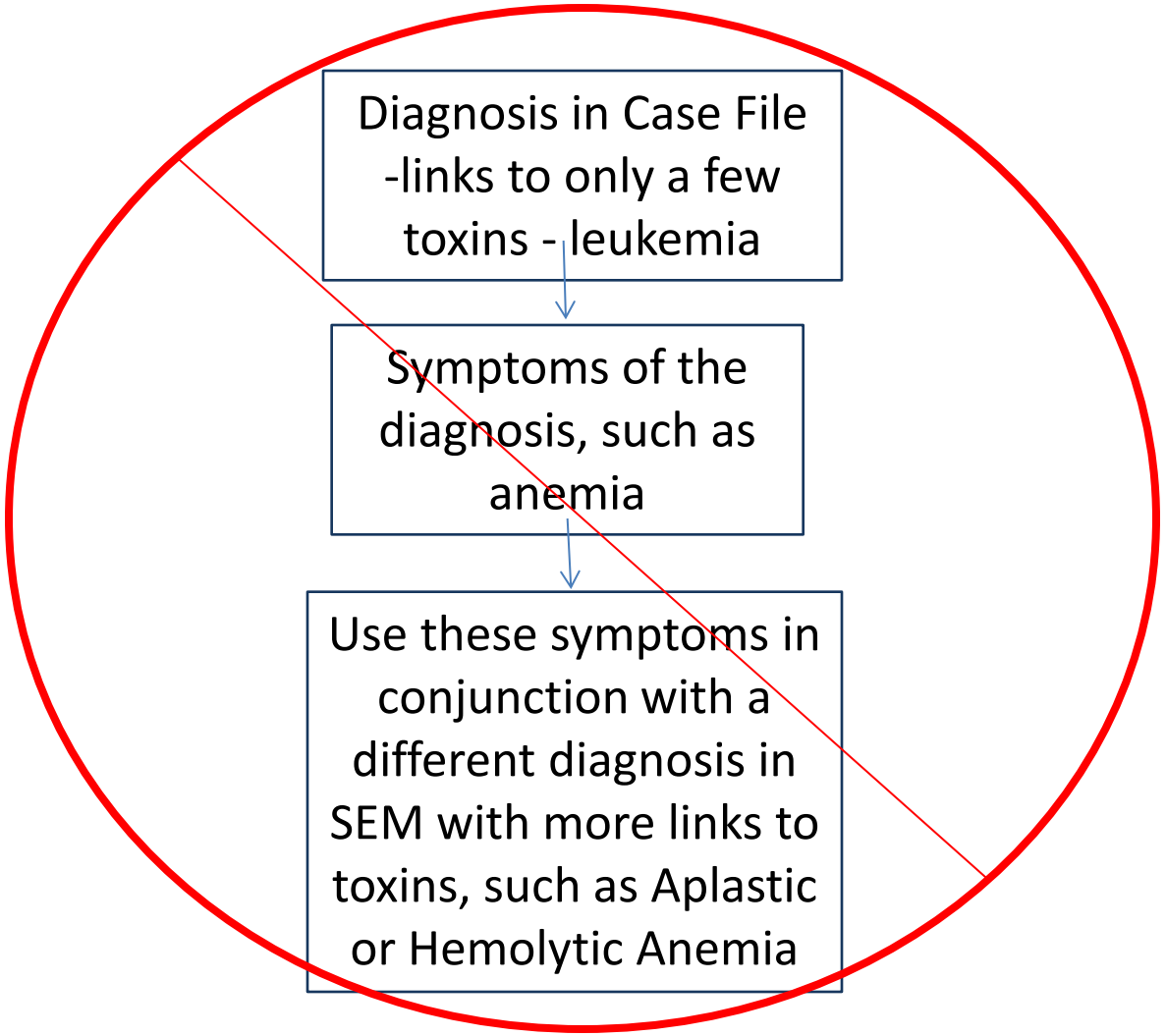

Statements of Accepted Facts (SOAFs)

- Don’t put “Facility A = K-25;” K-25 will do.
- Don’t put “Job Title B = sheet metal worker.” Say the employee was a sheet metal worker at K-25 from June 1963 through July 1971.
- Don’t include boilerplate job descriptions.
- It is essential to provide a concise, readable summary of the employee’s employment and the medical diagnosis under consideration.

Statements of Accepted Facts (SOAFs)

- Latest SOAF model is Exhibit 1 to Procedure Manual Chapter 2-0800, Developing and Weighing Medial Evidence.
- The information we need is exactly the same as before, we just want it more readable.
- Re-read any SOAFs from the perspective of whether it clearly communicates a summary of the medical, employment and potential exposures

What is a toxin?

- Biological or chemical substance
  - Potential to harm
  - Common substances can be dangerous in extreme exposures
- Level/duration of exposure determinations becoming more important
  - Easy work has been done i.e. asbestosis. Moving to more challenging exposure assessments
- Benzo(a)pyrene – everyone has exposure, but it is now linked to bladder cancer – so how much is enough for it to be significant?

Key Concepts

- Filter SEM results to a reasonable listing of likely exposures
  - Labor Category and Work Process are best surrogates
- Do not rely exclusively on SEM to decide the claim outcome – use all the tools and evidence available
- Avoid unnecessary development, such as inappropriate IH referrals
- The IH does not opine on cause, contribute or aggravation , only exposure.
- FAB is responsible for validating the reasonableness of the CE findings

Reminders

- For SEM computer assistance/log-in and access:
  - E-mail to SEM Administrator

    support@dol-sem.com

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- Registered Professional Engineer and Certified Safety Professional
- Former member of *Professional Safety*, the Journal of the American Society of Safety Engineers, peer review ERB
- Education: Engineering (Ohio State University 1973), MBA (Ohio University 1982), PhD Occupational Safety and Health (University of Tennessee 1998)
- Worked 32 years in DOE facilities at Portsmouth GDP, Oak Ridge Sites (ORGDP, ORNL, Y-12), Paducah GDP
- Authored nine peer-reviewed articles that were published in *Professional Safety*
- Authored a chapter on Safety and Health Training best practices in the *ASSE Safety Handbook* (2008)
- Adjunct professor of Safety and Health at Columbia Southern University (2002-present) and prior chair of graduate safety and health program