



U.S. DEPARTMENT OF ENERGY OFFICE OF EMERGENCY MANAGEMENT

SCREENING CRITERIA



**TRADE EMI-SIG
2004 ANNUAL MEETING
Washington, DC
May 3 - 6, 2004**





Screening Process

Intended to identify specific hazardous materials and quantities that, if released in an uncontrolled manner, could produce impacts consistent with the definition of an Operational Emergency involving the airborne release of a hazardous material

Current Screening Methodology

- Regulatory lists used to identify materials of concern and set threshold for analysis
- Exclusions based on type, use and dispersion potential





Recognized Problems

- 10 CFR 30.72 for NRC licensed facilities with “byproduct material” does not address many radionuclides of importance to DOE
- Some hazardous chemicals not on regulatory lists
- Basis for chemical regulatory thresholds not consistent with consequence-at-distance approach
- Consequences due to release of some listed chemicals can create an Operational Emergency for quantities well below the TQ/TPQs



Health & Safety Programs

Changes to Radiological Screening

- Provided more specifics about materials that can be excluded from consideration
 - License-exempt commercial products as described in 10 CFR 30 Parts 30.11-30.19
 - Non-dispersible materials





Changes to Radiological Screening

- Optional use of “Category 3” radionuclide thresholds from DOE-STD-1027-92
 - Includes more nuclides of importance to DOE
 - Methods used to derive thresholds similar to those used to derive 10 CFR 30.72 thresholds
 - For nuclides appearing on both lists the “Category 3” thresholds are lower
 - Align EM screening with Facility Hazard Category and TSR controls



Does Radionuclide require further analysis in EPHA?

License-Exempt Commercial Product?

Yes

No

Dispersible?

No

Yes

Quantity Less Than DOE-STD-1027-92 Category 3 (or 10CFR30.72) Value?

Yes

No

No quantitative analysis in EPHA required

Analyze in EPHA



Changes to Chemical Screening

- Consider extremely hazardous substances in quantities below listed thresholds, or not on regulatory lists
- Fixed minimum screening values,
 - “laboratory scale” quantities
 - little/no potential for impacts consistent with definition of OE



Chemicals Not Listed or Below Thresholds



- Additional screening steps necessary to ensure that all quantities of hazardous materials with the potential to cause an OE are addressed
- Principles embodied in Clean Air Act “General Duty” Clause, together with considerations of material characteristics, toxicity, and form used to develop additional screening steps



General Duty Clause

- Section 112(r)(1) of the Clean Air Act (EPA 2000) the General Duty Clause is stated as follows:

“(r) Prevention of Accidental Releases

*Purpose and General Duty – It shall be the objective of the regulations ... to prevent the accidental release and to minimize the consequences of any such release of any substance listed ... **or any other extremely hazardous substance.** The owners and operators ... have a **general duty**, ...maintain a safe facility ... to prevent releases, and to minimize the consequences ...”*



Characteristics of EHS

- No specific list of substances which qualify as EHS
- Senate report provides criteria:
 - may or may not be listed or identified by any Government agency;
 - short-term exposures from release to the air may cause death, injury or property damage due to;
 - toxicity, reactivity, flammability, volatility, or corrosivity.”



Dispersibility and Health Hazard

- No small particles => cannot be suspended and transported in air
- Liquids with a vapor pressure value of = 1 mm of mercury
- The NFPA hazard ratings
 - If a chemical has a health hazard rating of 3 or 4 it should be a candidate hazardous material

Laboratory Scale Quantities



- Based on definition in 29 CFR 1910.1450(b), *Occupational exposure to hazardous chemicals in laboratories*
- “Laboratory scale” means work with substances in which the containers, used for reactions, transfers, and other handling of substances are designed to be easily and safely lifted and handled by one person.



Laboratory Scale Quantities



Defined as:

- Liquid quantity of 5 gallons
- Solids up to 40 pounds
- Compressed gases in quantities of 10 pounds or less



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Laboratory Scale Quantities



Exception: one (1) pound laboratory scale threshold for materials with ***extraordinarily*** high acute toxicity and dispersibility. To include:

- Chemical warfare nerve agents
- Substances of similar acute toxicity
 - ERPG-3/TEEL-3 = 3 ppm, AND
 - Gas at normal temperatures, OR
 - Formulated/prepared for efficient dispersal in air (“weaponized”)



Where Additional Screening Steps Apply

Must analyze

TQ/TPQ

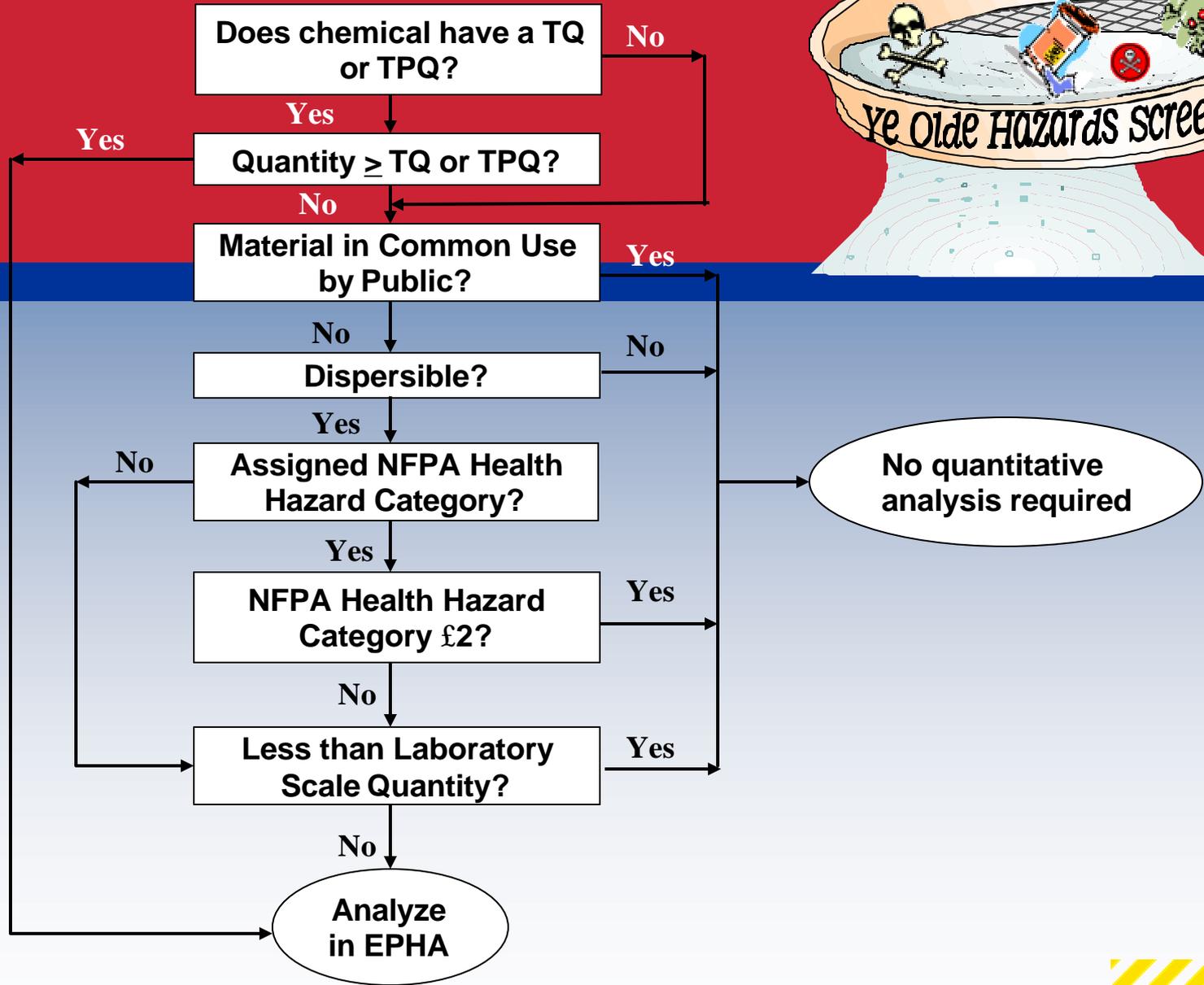
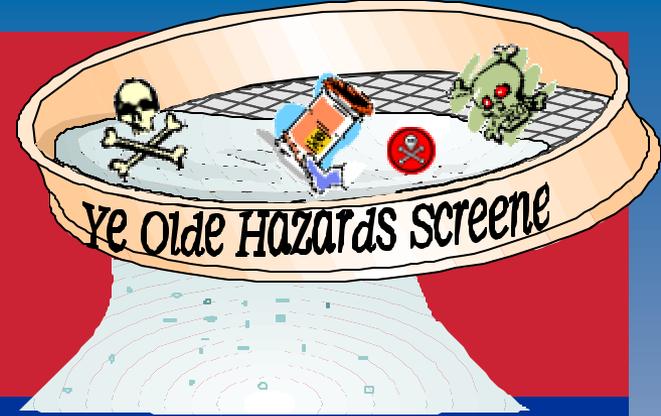
Additional screening steps

Lab Scale

Don't analyze

Quantity

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Summary of Changes

Radioactive Material Screening

- “Category 3” Thresholds from DOE-STD-1027-92 recommended
- More specific exclusion criteria

Chemical Screening

- Consideration of materials not on regulatory lists or in quantities below threshold quantities
- Use of “laboratory quantity” definition to establish fixed minimum screening values