SCREENING THRESHOLDS AND CONSEQUENCE-AT-DISTANCE

QUESTION: What role should a quantitative measure of consequence-at-distance play in establishing the "locally determined" minimum quantity thresholds needed to implement the DOE O 151.1C hazardous materials screening requirement for chemicals?

ANSWER: It is not recommended that consequence-at-distance be part of the rationale for setting locally-determined minimum screening thresholds for chemicals. Consequence-at-distance was not explicitly considered when selecting the minimum threshold values recommended in the EMG and its use tends to produce results that are contrary to several planning principles embodied in the Order (see following discussion**).** The EPHA is the appropriate venue for quantitative analysis of potential release consequences and those analyses should represent the actual material properties, storage/use conditions and postulated initiators, not the simplified and unrealistic depiction that results from use of arbitrary values for release fractions, dispersion coefficients and other parameters.

When setting local minimum screening thresholds, it is important to keep in mind the ultimate purpose of screening as stated in the Order (DOE O 151.1C, Chapter III, 3.b):

> "A Hazardous Material Screening Process must identify specific hazardous materials and quantities that, if released, ***could produce impacts consistent with the definition of an Operational Emergency*** (emphasis added). The potential release of these materials to the environment requires further analysis in an EPHA."

The Order indicates that a hazardous chemical ***may*** be eliminated as a candidate for analyses if it is stored and used only in quantities that can be "easily and safely manipulated by one person." The revised EMG recommends specific values that meet the Order intent. In general, a liquid quantity of about 5 gallons, the corresponding weight of solid material (about 40 pounds), or 10 pounds for compressed gases is about the <u>maximum</u> that can be safely handled by one person. As detailed below, there are several reasons why sites ***should*** exclude quantities smaller than these from further consideration.

- Use of locally determined values consistent with the "easily and safely manipulated by one person" definition will exclude from further consideration small quantities of most hazardous chemicals that, in practice, <u>have little or no potential to cause impacts consistent with the full definition of Operational Emergency</u>.

- Quantities consistent with the "easily and safely manipulated by one person" definition have long been handled and used throughout DOE, industry, commerce and educational institutions and there is no compelling evidence that such quantities have caused or are causing significant harm to people other than those directly involved with use or handling of the material. Hazard-specific planning and preparedness does not appear to be needed to protect people outside the workplace from the effects of these releases.

- Operations involving small quantities of hazardous chemicals are subject to DOE- and OSHA-mandated workplace hazard controls and safety programs. Those controls and programs are specifically created to protect the health and safety of the worker who performs operations with hazardous chemicals, as well as other people in the same workplace. Setting the minimum screening quantities at the amount "easily and safely manipulated by one person" limits the degree to which hazardous material emergency management programs overlap (and perhaps conflict) with the workplace safety program controls. Those controls are generally very effective, as evidenced by the fact that DOE occupational injury and fatality rates are consistently well below those for comparable labor categories in industry and commerce.

- As the material quantity and potentially affected area get smaller and smaller, the benefits of hazard-specific quantitative analysis and associated planning and preparedness measures also decrease. At some point, hazard-specific planning produces no improvement in the ability to protect human health and safety beyond what is provided by general chemical safety controls, worker training, and standard HAZMAT response practices.

It must also be recognized that screening in a substance for analysis does not mean that it necessarily becomes part of the facility's technical planning basis. If, during the EPHA analysis, the calculated consequences indicate that its release will not exceed the minimum consequence threshold for classification as an Operational Emergency (i.e., Alert) that quantity/inventory of that chemical may be excluded from the emergency management technical planning basis. In addition, some materials for which the consequences are shown to nominally exceed the Alert classification threshold may also be excluded from the emergency management technical planning basis if it is determined that the type and magnitude of the *response needed to deal with the event* would not be consistent with the Order definition of an Operational Emergency.