On Track

Noteworthy Activities From DOE Sites

No ERPG? Use a TEEL!
TEELs Provide Guidance When ERPGs Unavailable

Community exposure limits are essential components of emergency planning and emergency management for accidental releases of chemicals.

Emergency Response Planning Guidelines (ERPGs) are the most widely used and accepted community exposure limits at this time. ERPGs are developed through a peer-review process established by the American Industrial Hygiene Association (AIHA), and this review process has been validated by outside scientific agencies.

Unfortunately, many emergency planners have to perform hazard and consequence assessments for chemicals without ERPGs. For considering these chemicals in emergency planning at its sites, the DOE Emergency Management Advisory Committee's Subcommittee on Consequence Assessment and Protective Action (SCAPA) has developed Temporary Emergency Exposure Limits (TEELs). SCAPA was established to assist DOE's Director of Emergency Management by providing technical recommendations (radiological and nonradiological) in areas related to the health and safety of workers and the public.

Why TEELs Were Developed

To establish a system for conducting consistent emergency planning for chemicals at DOE facilities whether or not ERPGs are available, SCAPA developed the TEELs as an interim method. TEELs allow for the preliminary identification of hazardous or potentially hazardous situations for emergency planning.

The DOE Emergency Management Guide (EMG) calls for the use of TEELs when ERPGs are not available. Figure 1 shows the relationship of ERPGs and TEELs to the process for developing emergency management programs. The EMG is available on-line at http://www.explorer.doe.gov:1776/htmls/directives.html.

SCAPA recognizes the validity (and preferability) of peer-reviewed ERPG values, and TEELs are only used when ERPGs do not exist. Simply put, TEELs represent a linear regression best-fit hierarchy of alternatives to

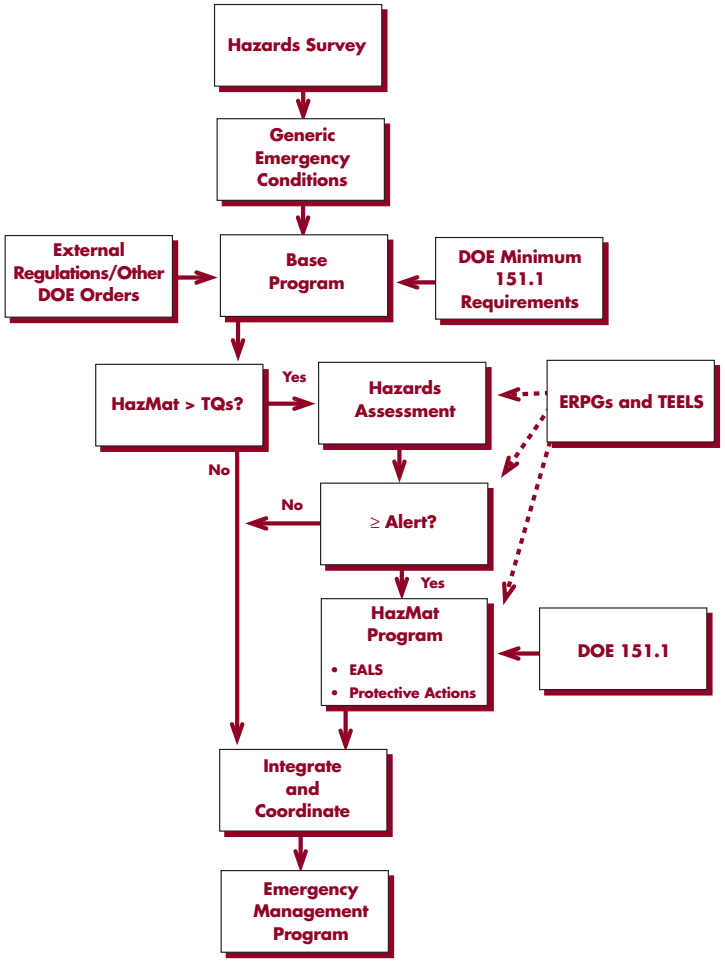

Figure 1. DOE Emergency Planning: ERPGs and TEELS

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ERPGs. The TEEL hierarchy uses occupational exposure limits (PELs, TLVs, etc.) and toxicity-based data (for example, TD_{LO}, TC_{LO}, LD_{50} , LC_{50}, LD_{LO}, and LC_{LO}) to derive TEELs. (Acronyms are listed at the end of this article.)

The TEEL: A Temporary Guideline

Whenever an ERPG is developed for a new chemical, the ERPG replaces the TEEL in emergency planning for that chemical because TEELs are subordinate to ERPGs. TEELs allow emergency planners to perform consequence assessments for chemicals for which there may never be ERPGs (i.e., for chemicals that may not be in wide enough use to be reviewed by the American Industrial Hygiene Association Emergency Response Planning Committee).

Using TEELs

The Environmental Protection Agency has recently published its Risk Management Program (RMP), which provides guidance to the public with respect to planning for emergency releases. This guidance, like the DOE EMG, mandates the use of ERPGs when available. TEELs are a temporary solution for the compliance process when ERPGs do not exist.

Advantages and Disadvantages

There are advantages and disadvantages in using TEELs. The main disadvantage in using a TEEL for emergency exposure planning is that the TEEL is a formulaic derivation of an ERPG value rather than a peer-reviewed, chemical-specific, community exposure limit value that includes the toxicological nuances of the chemical in question. The TEEL is an interim parameter meant to approximate an ERPG so that emergency planning and preparedness activities can be conducted.

The main advantage of using TEELs is that they allow the emergency planner to perform emergency planning within reasonable limits for the many chemicals not having ERPGs.

How to Get TEELs

To get more information on ERPGs, SCAPA, or TEELs, call Doan Hansen at 516-344-7535 or e-mail doan@bnl.gov. To get the comprehensive manuscript deriving TEELs, go to the SCAPA Web page at http://www.sep.bnl.gov/scapa.

To get detailed information on TEELs, including the current list of TEELs, call Doug Craig at 803-502-9640, e-mail doug.craig@wxsms.com, or go to http://tis- hq.eh.doe.gov/web/chem_safety/.

Acronyms

LC_{LO}	Lowest lethal concentration
LC_{50}	Concentration lethal to 50% of test animals
LD_{LO}	Lowest lethal dose
LD_{50}	Dose lethal to 50% of test animals
PEL	Permissible Exposure Limit
TC_{LO}	Lowest toxic concentration
TD_{LO}	Lowest toxic dose
TEEL	Temporary Emergency Exposure Limit
TLV	Threshold Limit Value

Quick Reference: Web Pages

DOE EMGs:
http://www.explorer.doe.gov:1776/htmls/directives.html

DOE SCAPA:
http://www.sep.bnl.gov/scapa

DOE SCAPA TEELs:
http://tis-hq.eh.doe.gov/web/chem_safety/