



**EMERGENCY
MANAGEMENT
ISSUES**

SCAPA Chemical Exposures

Working Group:

TEELs update

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Summary

- AEGs incorporated
- ERPGs updated
- TEEL-derivation methodology revised
 - Sixty minute AEGs now primary PAC criterion
 - Both final and interim values used
 - ERPGs relegated to second choice for PACs
- LELs entered on Input data worksheet
 - TEEL values on “Rec TEELs” output flagged if greater than certain percentages of LEL
 - Source of TEELs column added to “Rec mTEELs”
- Simple asphyxiant TEELs revised

Introduction

- “TEELs Rev 20” published on web April 2004
- TEEL Advisory Group (TAG) established 2004
 - TAG met first at 2004 EMI-SIG meeting
 - Tom Tuccinardi chair
 - Richard Thomas, Rocky Petrocchi, Po Yung Lu, Cliff Glantz and Doug Craig members
- TEEL-derivation methodology revisions approved by TAG include
 - AEGL incorporation in PACs
 - LEL treatment
 - Simple asphyxiant TEELs revised
 - Revised TEEL table designation
- “TEELs Rev 21” not yet published

AEGLs

- **TAG selected 60-minute AEGLs as the primary Protective Action Criteria**
 - PAC-1 = AEGL-1
 - PAC-2 = AEGL-2
 - PAC-3 = AEGL-3
 - required inclusion of additional columns in TEEL Input worksheet
 - Macro revised with option to select AEGL exposure time value
 - AEGLs used “as is”, with NO rounding
- **TAG decided to use both “Final” and “Interim” AEGLs**
 - All published AEGL values entered on worksheet
 - AEGL values bolded, in larger font, in “Rec TEEL” and “Rec mTEEL” output worksheets

ERPGs

- **2004 ERPG Handbook presents values for 109 chemicals**
- **2005 ERPG list includes values for 4 new chemicals**
- **ERPGs for 5 chemicals reviewed**
 - Four were unchanged
 - Methyl isocyanate ERPG-2 and ERPG-3 decreased

Table 1: TEEL-0

Primary Guideline	Alternative Guideline	Source
PEL-TWA	TLV-TWA	ACGIH
	REL-TWA	NIOSH
	WEEL-TWA	AIHA
	MAK-TWA	DFG
	CEGL/Other	NAS

Table 2: TEEL-1

Primary Guideline	Alternative Guideline	Source
TEEL-1	-->	SCAPA
	PEL-STEL	OSHA
	TLV-STEL	ACGIH
	REL-STEL	NIOSH
	WEEL-STEL	AIHA
	Other	-
	TLV-TWA x 3	ACGIH

Table 3: TEEL-2

Primary Guideline	Alternative Guideline	Source
TEEL-2	-->	SCAPA
	60m EEGL/Other	NAS
	LOC	EPA/DOT
	PEL-C	OSHA
	TLV-C	ACGIH
	REL-C	NIOSH
	WEEL-C	AIHA
	TLV-TWA x 5	ACGIH
	TC _{Lo}	ChemBank & SAX CDs
	TD _{Lo}	

Table 4: TEEL-3

Primary Guideline	Alternative Guideline	Source
TEEL-3	-->	SCAPA
	30m EEGL/Other	NAS
	IDLH	NIOSH
	LC ₅₀	ChemBank
	LC _{Lo}	and/or
	LD ₅₀	SAX
	LD _{Lo}	CDs

Exposure time issue

- AEGs developed for five exposure times:
10, 30, 60, 240, 480 minutes
- ERPGs apply to exposures of
“up to one hour”
- TEELs: Peak or maximum fifteen-minute TWA
concentration at receptor point
- Issue discussed at special meeting

LELs

- Lower Explosive Limit not originally considered in TEEL derivation
 - Safety not health concern
 - issue debated by TAG
- Decision made to adopt AEGl approach
 - TEEL values on “Rec TEELs” output flagged
 - $10\% \text{ LEL} \leq \text{TEEL} < 50\% \text{ LEL}$ - italicized pink
 - $50\% \leq \text{TEEL} < \text{LEL}$ - italicized, underlined, red
 - $\text{TEEL} \geq \text{LEL}$ - italicized, double underlined, dark red

Simple Asphyxiants

- **New approach adopted for all gases that are simple asphyxiants**
 - **TEEL-0 = 60,000 ppm**
 - O₂ conc. = 19.5%, OSHA lower limit for confined space entry
 - **TEEL-1 = 145,000 ppm**
 - O₂ conc. = 18%, decreased ability to work strenuously
 - **TEEL-2 = 280,000 ppm**
 - O₂ conc. = 15%, impaired coordination, perception, judgement
 - **TEEL-3 = 500,000 ppm**
 - O₂ conc. = 10%, unconsciousness and death

TEELS

- To avoid confusion, TEEL tables will have a new heading
- “AEGs, ERPGs, and TEELs for Chemicals of Concern”
 - Table 1 includes some physicochemical data
 - Table 2 gives values in “original” units
 - includes “Comments” column
 - Table 3 orders chemicals by CASRN
 - Table 4 gives values in mg/m³
 - includes column giving source of values

Progress to date

- TEELs derived and published for 2519 chemicals: “TEELs Rev 20”, on
 - “http://tis-hq.eh.doe.gov/web/chem_safety/”
- “Introduction” supplements published TEEL-derivation methodology
- “TEELs Rev 21” will include
 - chemicals with 60-min final and interim AEGs
 - Output values formatted as alert for LEL value
 - values for about fifty new chemicals
 - One-page TEEL-value review request form posted on SCAPA web site