

Table 4 -- Chlorine (Spill or Release)



Instrument Guidance

Regulatory Guidance

Reference

Target Compound	Instrument	Detection Level	Intrinsically Safe (Y/N)	IP	Conversion	Occupational Action Levels		AEGL-1			TEEL-0	ERPG-1	Air Sampling			
						TWA	IDLH	1-hr	4-hr	8-hr	15-min TWA	1-hr	Media	Method	Flow Rate/ Total Volume	
Gas																
Chlorine	MultiRAE/AreaRAE Cl ₂ Sensor	0-10 ppm	Y	11.48 eV	1 ppm = 2.9 mg/m ³	PEL = C 1 ppm REL = C 0.5 ppm (15 mins), ST 1 ppm TLV = 0.5 ppm, ST 1 ppm	10 ppm	0.5 ppm	0.5 ppm	0.5 ppm	0.5 ppm	1 ppm	PTFE Cassette, 225-9006	NIOSH 6011	0.3-1 L/min; 90 L	
	MultiRAE Pro Cl ₂ Sensor	0-50 ppm	Y													
	Dräger Pac III Cl Sensor	0.1-20 ppm	Y													
	Dräger Tube	≥0.2-30 ppm	Y													
	Dräger Chip	≥0.2-10 ppm	N (Y w/option)													
	SPM	0.05-1.5 ppm	N (Y w/option)													
Radiation¹																
Radiation	Ludlum Model 192	0-5,000 μR/hr	N	NA	NA	60-100 μR/hr*	NA	NA	NA	NA	NA	NA	RADeCO Filter Paper (2")	RSSOP 209/501	α = 2500 ft ³ β/γ = 1250 ft ³	
	Ludlum Model 2241-2 w/Pancake Probe	0-100,000 cpm or 0-200 mR/hr	N													300 cpm*
	Ludlum Model 2241-3 w/Pancake Probe	0-100,000 cpm or 0-200 mR/hr	N													300 cpm*
*These are not TWA(s). Normal gamma radiation background is from 5-20 μR/hr; however, higher backgrounds may exist. If readings are 3 times background or greater than 60-100 μR/hr or greater than 300 cpm, then stop work and consult with a Health Physicist. Refer to Hazardous Evaluation Flow Chart for Unknowns in Attachment A.																



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Notes:

For guidance only. These tables do not supersede a SSHASP at any time or on any response.
Use teflon tubing for calibration instead of tygon tubing.

¹ Standard EPA Emergency Response Protocol is to screen for radiation with a Micro-R at all emergency responses. If readings are three times background, responders consult with a Health Physicist. Additional radiation equipment is available to monitor for Alpha, Beta and Gamma, but is not included in this table.

AEGL-1 is the airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience notable discomfort, irritation, or certain asymptomatic non-sensory effects; however, the effects are not disabling and are transient and reversible upon cessation of exposure.

TEEL-0 is the temporary level of concern derived according to a tiered, formula-like methodology; representing concentrations associated with no effects.

ERPG-1 is the acute exposure concentration of the general population for up to 1 hour associated with effects expected to be mild or transient.

Data on tables are from the following sources:

<http://www.epa.gov/oppt/aeql/pubs/chemlist.htm>

<http://www.cdc.gov/niosh/npg/npgsyn-a.html>

<http://wiser.nlm.nih.gov/>

<http://www.skinc.com/>

EPA's website used to research AEGLs using the chemical's name or chemical abstracts service registry numbers.

CDC NIOSH Pocket Guide to Chemical Hazards website

WISER website

SKC, Inc. website (Air Sampling Media Part No. is specific to SKC)

Acronyms:

≥ -- greater than or equal to

ACGIH -- American Conference of Governmental Industrial Hygienists

AEGL -- acute exposure guideline levels

C -- ceiling (concentrations that should not be exceeded during any part of work exposure)

CDC -- Centers for Disease Control and Prevention

cpm -- counts per minute

EPA -- U.S. Environmental Protection Agency

ERPG -- emergency response planning guideline

eV -- electron volt

IDLH -- immediately dangerous to life and health

IP -- ionization potential

L/min -- liter per minute

mg/m³ -- milligrams per cubic meter

μR/hr -- micro Roentgens per hour

NA -- not available/applicable

NIOSH -- National Institute for Occupational Safety and Health

OSHA -- Occupational Safety and Health Administration

PEL -- permissible exposure limit (OSHA)

ppm -- parts per million

R/hr -- Roentgens per hour

REL -- recommended exposure limit (NIOSH)

SPM -- single-point monitor

SSHASP -- site-specific health and safety plan

ST -- short term

TEEL -- temporary emergency exposure limit

TLV -- time-limited value (ACGIH)

TWA -- time-weighted average

WISER -- Wireless Information System for Emergency Responders

Y w/option - yes with option; see manufacturer's instrument manual for information