

DETERMINING WHICH CONTROL BANDS & GUIDANCE SHEETS APPLY

ADVICE FOR PLANNERS

The Controlling Chemical Hazards guideline and web project uses chemical information gathered from safety data sheets and other sources information to select one of four control approaches (bands). To determine which control applies, supervisors should work with the owner's site representative (Planner) to gather information about the types of chemicals that will be present and how they will be used. The simplest way to decide on the appropriate control band is to use the Controlling Chemical Hazards guideline at www.EnergySafetyCanada.com. Alternatively, you can follow the steps below to complete the work manually.

To evaluate and analyze the chemical hazard, you have three options

- Option 1** Consult a health, hygiene, or chemical specialist
- Option 2** Use a control-banding approach. Quantify the **severity** and **likelihood** of the hazard by control banding, which requires you to:
- » Quantify the severity by identifying the hazard group through the risk phrases.
 - » Quantify the likelihood of the hazard by identifying the quantity used and dustiness/volatility.
 - » Quantify the risk.

1 Quantify the severity by identifying the hazard group through the risk phrases below.

Hazard Group	Hazard Statement Codes	WHMIS 2015 (GHS) Category Values
Group A	H303, H304, H305, H313, H315, H316, H319, H320, H333, H336 (and all hazard codes not otherwise listed)	Acute toxicity (lethality), any route, 5; skin irritation, 2 or 3; Eye irritation, 2
Group B	H302, H312, H332, H371	Acute toxicity (lethality), any route, 4; Specific target organ toxicity (STOT), single exposure, 2; Acute toxicity (systemic), any route, 2
Group C	H301, H311, H314, H317, H318, H331, H335, H370, H373	Acute toxicity (lethality), any route, 3; Acute toxicity (systemic), any route, 1; Specific target organ toxicity (STOT), single exposure, 1; Corrosivity, 1; Eye damage/irritation, 1; Respiratory system irritancy; Skin sensitization; Specific target organ toxicity (STOT), repeated exposure toxicity, any route, 2
Group D	H300, H310, H330, H351, H360, H361, H362, H372	Acute toxicity (lethality), any route, 1 or 2; Carcinogenicity, 2; Specific target organ toxicity (STOT), repeated exposure toxicity, any route, 1; Reproductive toxicity, 1 or 2
Group E	H334, H340, H341, H350	Mutagenicity 1 or 2; Carcinogenicity class 1; Respiratory sensitization
Group S	H310, H311, H312, H314, H315, H317, H318, H319, H320, H370 (dermal only), H371 (dermal only), H372 (dermal only), H373 (dermal only)	Acute toxicity (lethality), dermal only, 1, 2, 3 or 4; Corrosivity, 1; Skin irritation, 2; Eye irritation, 1 or 2; Skin sensitization; Specific target organ toxicity (STOT), single and repeated, dermal only, repeated exposure toxicity, dermal only, 1 or 2

2 Quantify the likelihood of the hazard by identifying quantity used and dustiness/volatility.

Quantity	Solid (Weight)	Typically Received In:	Liquid (Weight)	Typically Received In:
Small	Grams	Packets or bottles	Millilitres	Bottles
Medium	Kilograms	Kegs or drums	Litres	Drums
Large	Tonnes	Bulk	Cubic Metres	Bulk

The following describes the level of dustiness of solids:

Describing Solid Dustiness

Low: Pellet-like solids that do not break up. Little dust is seen during use (e.g. PVC pellets, waxed flakes).

Medium: Crystalline, granular solids. When used, dust is seen, but settles quickly. Dust is left on surfaces after use (e.g. soap powder).

High: Fine, light powders. When used, dust clouds can be seen to form and remain in the air for several minutes (e.g. cement, carbon black, gilsonite dust).

3 Quantify the risk.

Hazard Groups	Risk		
Hazard Group A Causes mild and reversible skin and eye irritations, combustible*	Low Risk Use administrative controls; do field-level hazard assessment; review SDS; use PPE	Low Risk	Medium Risk
Hazard Group B Harmful on single exposure, flammable	Low Risk Use administrative controls; do field-level hazard assessment; review SDS; use personal protective equipment PPE	Medium Risk	High Risk
Hazard Group C Severely irritating and corrosive; causes skin sensitization, highly flammable	Medium Risk Use engineering controls; assess chemical exposure and flammability risks	High Risk	Extreme Risk
Hazard Group D Very toxic on single exposure; harmful to reproduction, extremely flammable	High Risk Containment and advanced engineering controls; assess chemical exposure and flammability risk	Extreme Risk	Extreme Risk
Hazard Group E Causes cancer by genetic damage; causes occupational asthma	Extreme Risk Eliminate if possible; seek expert advice, do process hazard analysis; implement exposure control plan (ECP)	Extreme Risk	Extreme Risk
	(Quantity + Volatility or Dustiness) Small + Low/Med/High Medium + Low Large + Low Flammability Low Quantity	(Quantity + Volatility or Dustiness) Medium + Medium Flammability Medium Quantity	(Quantity + Volatility or Dustiness) Medium + High Large + Medium Large + High Flammability Large Quantity

Appendix A: Chemical Information Sheet

Name of Chemical or Mixture	CAS Number	R-Phrases	H-Statements	Occupational Exposure Limit	Type	Form (as used)	Quantity
					<input type="checkbox"/> Dust	<input type="checkbox"/> Pellet (does not break up) <input type="checkbox"/> Granular or Crystalline <input type="checkbox"/> Fine Solid or Liquid Powder	<input type="checkbox"/> Grams <input type="checkbox"/> Kilograms <input type="checkbox"/> Tons
					<input type="checkbox"/> Vapor	Boiling Point: _____ Operating Temp: _____	<input type="checkbox"/> Milliliters <input type="checkbox"/> Liters <input type="checkbox"/> Cubic Meters
					<input type="checkbox"/> Dust	<input type="checkbox"/> Pellet (does not break up) <input type="checkbox"/> Granular or Crystalline <input type="checkbox"/> Fine Solid or Liquid Powder	<input type="checkbox"/> Grams <input type="checkbox"/> Kilograms <input type="checkbox"/> Tons
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					<input type="checkbox"/> Vapor	Boiling Point: _____ Operating Temp: _____	<input type="checkbox"/> Milliliters <input type="checkbox"/> Liters <input type="checkbox"/> Cubic Meters
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					<input type="checkbox"/> Vapor	Boiling Point: _____ Operating Temp: _____	<input type="checkbox"/> Milliliters <input type="checkbox"/> Liters <input type="checkbox"/> Cubic Meters
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					<input type="checkbox"/> Vapor	Boiling Point: _____ Operating Temp: _____	<input type="checkbox"/> Milliliters <input type="checkbox"/> Liters <input type="checkbox"/> Cubic Meters
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					<input type="checkbox"/> Vapor	Boiling Point: _____ Operating Temp: _____	<input type="checkbox"/> Milliliters <input type="checkbox"/> Liters <input type="checkbox"/> Cubic Meters

BEFORE YOU START

- Gather safety data sheets for all the chemicals you will be working with.
- Understand the process steps that involve handling of chemicals.
- Decide if there is a less hazardous material or process that can be used.
- Determine if the chemical composition will change while the work is being done.

To determine the volatility of liquids (low, medium, or high):

- Find out the boiling point of your substance by checking Section 9 of the MSDS or under “Physical properties” in the international chemical safety card.
- Find out the process temperature at which the task is carried out.
- Find the point on the graph where the boiling point meets the process temperature. This determines the volatility of the liquid.