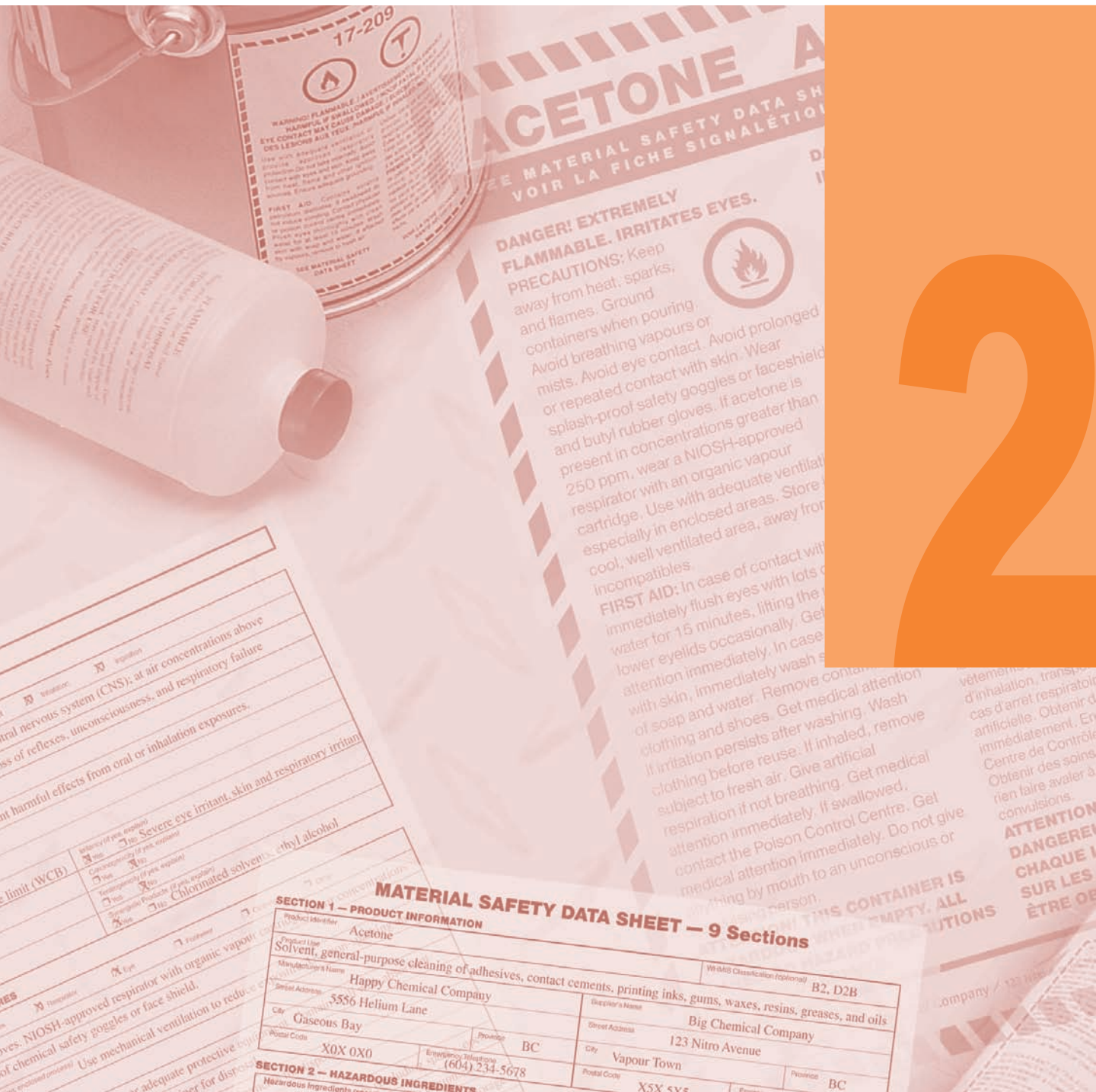


STEP 2

Review Hazardous Ingredients



Step 2: Review Hazardous Ingredients

BASIC INFORMATION

Once you have determined that your product is controlled under WHMIS, the next step is to review the hazardous ingredients, including the Chemical Abstract Services Registry numbers (CAS numbers) and percentages.

For each hazardous ingredient, the MSDS must include the:

- Specific chemical name
- CAS number (three groupings of numbers separated by hyphens)
- Percentages

Suppliers must check all of this information for each hazardous ingredient to ensure that the information is valid. (More information is found in Step 3 – Prepare a 9-Section MSDS – Hazardous Ingredients, page 59.)

The manufacturer should be able to provide chemical information on hazardous ingredient(s) for a product. The table, Sources for MSDS Information Items, page 229, identifies additional sources of chemical information including reference texts. An excerpt is shown below:

Sources for MSDS Information Items (excerpt)	
CPR Items	Where to Find the Information
Hazardous Ingredients	
5. Hazardous Ingredients (specific chemical name)	<ul style="list-style-type: none">• ACGIH• CAS Registry• CCOHS (CHEMINFO)
6. Percentages (exact concentration or range of concentration)	<ul style="list-style-type: none">• Manufacturer
7. CAS number	<ul style="list-style-type: none">• Sax

Technical Information Contacts, page 213, provides details (such as address and telephone number) for all of the information sources listed in Sources for MSDS Information Items. Useful WHMIS Related-Internet Sites are also listed in this guide, page 218.

CASE STUDY #5: REVIEWING HAZARDOUS INGREDIENTS

Case Study #2 on page 25 showed how to classify (Step 1 in the Four Steps to Compliance) Best Brake Cleaner 123. This case study explains how to review hazardous ingredients (Step 2), for the same product.

A copy of the manufacturer's MSDS can be found on page 17. The MSDS for Best Brake Cleaner 123 lists three hazardous ingredients:

	Listed CAS Number	Listed %
Hexane	64742-49-0	80–90%
Ethanol	67-17-5	1–10%
Methanol	67-56-1	55%

This case study will:

1. Check specific chemical names and CAS numbers for the ingredients in Best Brake Cleaner 123
2. Check percentages for the ingredients in Best Brake Cleaner 123
3. Give results of the hazardous ingredient review for this product

4. Show the original manufacturer's MSDS Hazardous Ingredients Information
5. Show the revised MSDS Hazardous Ingredients Information, updated to meet Canadian requirements

1. Check Specific Chemical Names and CAS Numbers

A variety of search results for chemical information on each ingredient is given to show that various sources can provide similar information:

Search A: 2005 ACGIH TLVs and BEIs

Substance [CAS number]	Adopted Values		Notations	Mol Wgt	TLV Basis-Critical Effect(s)
	TWA (ppm or mg/m ³)	STEL/C (ppm or mg/m ³)			
Ethanol [64-17-5]	1000 ppm	–	A4	46.07	Irritation
n-Hexane [110-54-3]	50 ppm	–	Skin; BEI	86.18	Neuropathy; CNS; irritation
Hexane, other isomers	500 ppm	1000 ppm	–	86.18	CNS; irritation
Methanol [67-56-1]	200 ppm	250 ppm	Skin; BEI	32.04	Neuropathy; vision; CNS

A4 = Not classifiable as a human carcinogen

Search B: CAS Registry (www.cas.org)

Note: A subscription to the database is required to obtain this information. Additional detailed toxicology information is also available.

Search name = ethanol
RN *64-17-5*** Registry**
 CN ethanol

Search name = hexane
RN *110-54-3*** Registry**
 CN n-Hexane

Search name = methanol
RN *67-56-1*** Registry**
 CN methanol

Search C: CCOHS (CHEMINFO) (www.ccohs.ca)

Note: This information can be obtained without a subscription to the database. A subscription would permit access to additional, detailed toxicology information.

Search name = ethanol		
CCOHS Chemical Name	Synonyms	CAS Registry Number
Ethanol	<ul style="list-style-type: none">Ethyl alcoholEthyl hydrateEthyl hydroxide1-HydroxethaneMethyl carbinol	64-17-5

Search name = hexane		
CCOHS Chemical Name	Synonyms	CAS Registry Number
n-Hexane	<ul style="list-style-type: none">DipropylHexane (non-specific name)Hexyl hydrideNormal hexane	110-54-3

Search name = methanol		
Search Results: no records matched		

Search D: Sax

(Sax, Irving N., *Dangerous Properties of Industrial Materials*, latest ed.)

Note: This information was obtained from a CD-ROM of this text. Additional, detailed toxicology information is also available.

Search name = ethanol
ETHYL ALCOHOL
CAS: 64-17-5

Search name = hexane
n-HEXANE
CAS: 110-54-3

Search name = methanol
METHYL ALCOHOL
CAS: 67-56-1

2. Check Percentages

The concentration ranges used must lie within both limits of a range listed under the CPR:

Acceptable Concentration Ranges as per CPR 11	
0.1–1%	10–30%
0.5–1.5%	15–40%
1–5%	30–60%
3–7%	40–70%
5–10%	60–100%
7–13%	

Ethanol:

- 1–10% listed on the MSDS is unacceptable; this range does not lie within a range listed in the *CPR*.

Hexane:

- 80–90% listed on the MSDS is acceptable; this range lies within a range (60–100%) listed in the *CPR*.

Methanol:

- 55% listed on the MSDS is acceptable; exact concentrations are acceptable.

Note: The minimum percentages for all ingredients add up to > 100%.

4. Manufacturer's MSDS — Hazardous Ingredients

Incorrect information is highlighted in red.

SECTION 1 — Material Identification and Hazard Components

Component	CAS Number	% (WT)	OSHA PEL	ACGIH TLV
1. Hexane	64742-49-0	80–90	50 ppm	50 ppm
2. Ethanol	67-17-5	1–10	1000 ppm	1000 ppm
3. Methanol	67-56-1	55	200 ppm	200 ppm

5. Revised MSDS (compliant) — Hazardous Ingredients

The hazardous ingredients information has been revised, based on the chemical information search results and up-to-date information from the manufacturer.

SECTION 1 — Material Identification and Hazard Components

Component	CAS Number	% (WT)	OSHA PEL	ACGIH TLV
1. n-Hexane	110-54-3	15–40	50 ppm	50 ppm
2. Ethanol	64-17-5	5–10	1000 ppm	1000 ppm
3. Methanol	67-56-1	15–40	200 ppm	200 ppm

3. Hazardous Ingredient Review Results

Hexane is a generic name rather than a specific chemical name. The manufacturer must provide the specific chemical name for this ingredient. Note that while specific synonyms are acceptable, for example, methanol or methyl alcohol, ethanol or ethyl alcohol, *alcohol* is a generic term and is unacceptable.

CAS number for hexane is wrong. The supplier must correct the CAS number based on the search results.

CAS number for ethanol is wrong. The supplier must correct the CAS number based on the search results.

Percentage range for ethanol is incorrect, and the minimum percentages for all ingredients add up to > 100%. The manufacturer must provide accurate information for each hazardous ingredient.

CONFIDENTIAL BUSINESS INFORMATION (“TRADE SECRETS”)

Confidential business information is specific product information that suppliers or employers are permitted to withhold from an MSDS or label for a period of **three years**. Crucial information such as health hazards cannot be withheld.

Under Canadian WHMIS legislation, a supplier may request from the Hazardous Materials Information Review Commission an exemption to protect certain information (for example, specific chemical name, CAS number, and % concentration), if that information gives the company an economic advantage over competitors. A fee, which varies depending on the number of different products and the number of ingredients considered confidential, must accompany each application. See page 261 for a blank HMIRC CBI application form.

Types of information that may be granted a CBI exemption are:

- Chemical identity
- Concentration of ingredients
- Information that can be used to identify an ingredient, such as a toxicological study
- Information that can be used to identify the controlled product

- Information that can be used to identify the supplier of the controlled product

The supplier must confirm that the information is a valuable secret, and supply the missing information to a screening officer at HMIRC. The screening and review process maintains the confidentiality of the supplier’s information.

For the supplier to continue selling the product in Canada, an acceptable CBI exemption statement must be listed on the MSDS. It must include:

- A filing number and date granted (given when the claim is registered with HMIRC)
- A registration number and date granted (given after the review process if HMIRC grants the exemption)

An MSDS with CBI registration is valid for three years. After three years, a supplier who wishes to continue withholding hazardous ingredient(s) information must submit a new CBI application to HMIRC.

Even with a CBI exemption, the supplier must provide the following information on the MSDS:

- Hazard information
- Specific preventive measures
- First aid treatment information

Example: Acceptable Confidential Business Information Exemption Statements

Note: This supplier has provided generic chemical names on the MSDS for the hazardous ingredients registered for the CBI exemption.

MSDS Section 2 After CBI Application Filed with HMIRC

SECTION 2 — Hazardous Ingredients

Hazardous Ingredients	%	CAS Number	LD ₅₀ , ppm (Rat, oral)	LC ₅₀ , ppm (Rat, inh.)
Part A				
Methacrylate resin	12–15	xxxxxx**	n/av	n/av
Methacrylate esters	24–30	xxxxxx**	n/av	n/av
Quartz sand	35–40	14808-60-7	n/av	n/av

** HMIRC #1234, filed on January 1, 2005

Revised MSDS Section 2 After Claim Granted by HMIRC

SECTION 2 — Hazardous Ingredients

Hazardous Ingredients	%	CAS Number	LD ₅₀ , ppm (Rat, oral)	LC ₅₀ , ppm (Rat, inh.)
Part A				
Methacrylate resin	12–15	xxxxxx**	n/av	n/av
Methacrylate esters	24–30	xxxxxx**	n/av	n/av
Quartz sand	35–40	14808-60-7	n/av	n/av

** CBI #1234, granted on March 18, 2005

UNREGISTERED TRADE SECRET CLAIMS

In the United States, CBI may be called *trade secrets* or *proprietary information*. If the term *trade secret* or *proprietary information* appears on an MSDS, a

Canadian registration number and date must also appear; otherwise, the MSDS is not valid in Canada. Examples of invalid MSDSs are:

Example 1:

SECTION II: Hazardous Ingredients

Components	CAS Number	% (WT)	OSHA PEL	ACGIH TLV	Other Limits
<i>Proprietary mixture of glycol ethers and polyglycols.</i>					
<i>Please note that the chemical identity of some or all of the above hazardous ingredients is confidential business information and is being withheld as permitted by 29 CFR 1910.1200 and various State Right-to-Know laws.</i>					

Invalid in Canada

Example 2:

SECTION II: Hazardous Ingredients

Components	CAS Number	% (WT)	PEL	TLV	STEL
Resin	27301 — 01T*	25–30	NE	NE	NE
Acrylic acid ester	27301 — 03T*	10–15	NE	NE	NE
Quartz sand	014808-60-7	35–40	NA	NA	NA

* Trade Secret Registry Number

Invalid in Canada

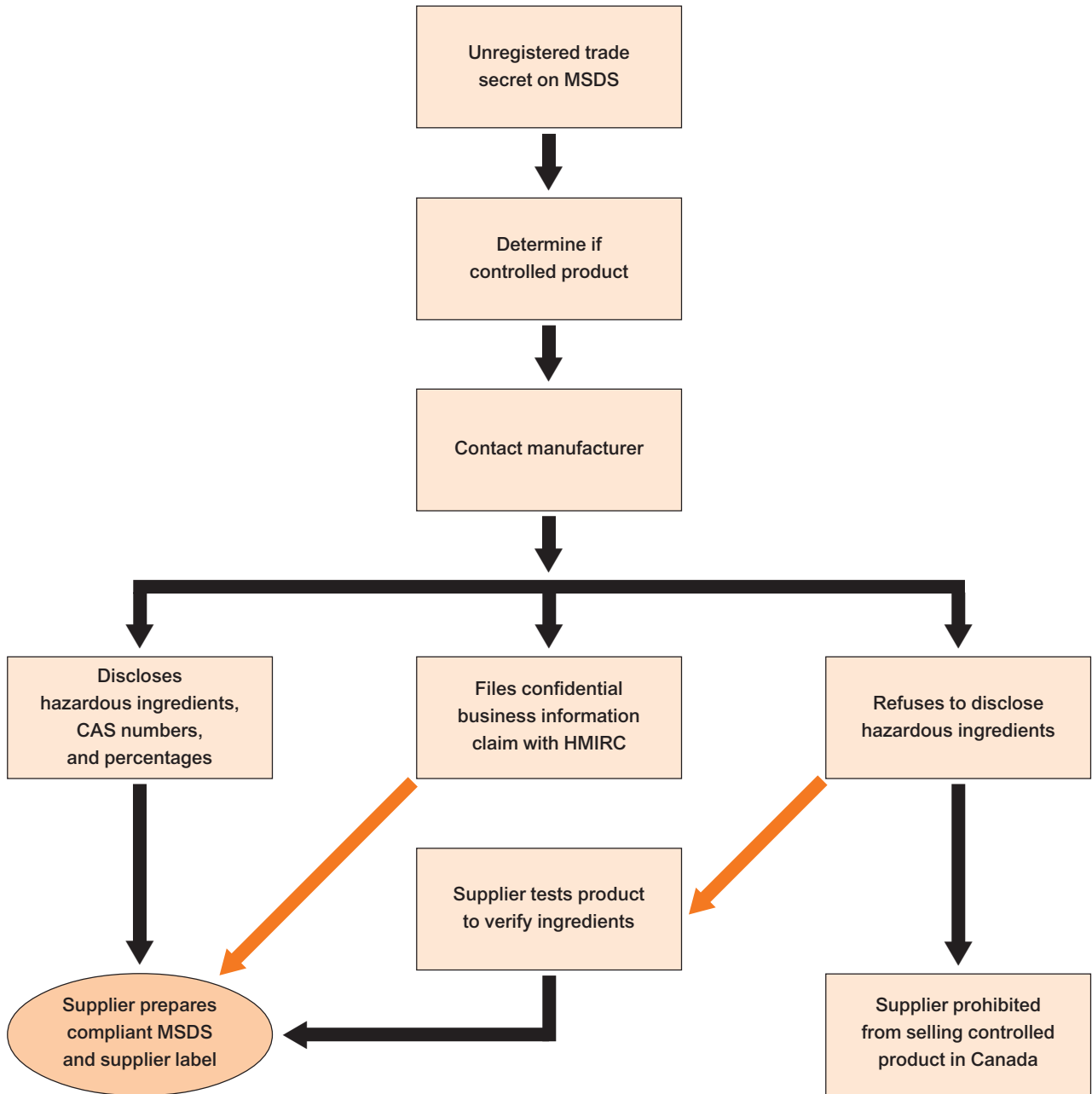
For products bearing unregistered trade secret claims, the supplier may disclose all secret hazardous ingredients, if the manufacturer supplies the information. A manufacturer who does not choose to disclose the information should be referred to HMIRC.

While an application is being made by the manufacturer, the supplier may use the manufacturer's filing number and date as a reference on the MSDS.

If the manufacturer refuses to disclose the information and will not register with HMIRC, the supplier may test the product to determine the ingredients.

Suppliers are prohibited from selling the product in Canada, and employers and workers from using or handling the product, until the secret information is disclosed. The product may be stored until the required information is identified.

Flow Chart: Trade Secrets on an MSDS



Example: Revising an MSDS with Unregistered Trade Secrets

A manufacturer has provided the Canadian supplier with an MSDS that gives the following information in the Hazardous Ingredients section:

Product: C-9876 — Unregistered Trade Secrets on MSDS

SECTION 2 — Hazardous Ingredients

Hazardous Ingredients	CAS Number	PEL	%
<i>Polymer RWK 54</i>	<i>Proprietary*</i>	<i>Not established</i>	<i>Trade Secret*</i>
<i>Aromatic hydrocarbon</i>	<i>N/AV</i>	<i>Not established</i>	<i>15–60</i>
<i>Solvent Naptha</i>	<i>64742-**-*</i>	<i>Not established</i>	<i>15–60</i>
<i>Alkyl Ester</i>		<i>Not established</i>	<i>1–2</i>

N/AV = not available

** Proprietary information*

The supplier contacted the manufacturer, who decided to disclose required information instead of filing a CBI claim with HMIRC. See below for the revised MSDS disclosing the trade secrets:

Product: C-9876 — Disclosure of Hazardous Ingredients

SECTION 2 — Hazardous Ingredients

Hazardous Ingredients	% (WT)	CAS Number	LD ₅₀ of Ingredient	LC ₅₀ of Ingredient
<i>Diphenylmethane-4,4'-diisocyanate</i>	<i>65</i>	<i>101-68-8</i>	<i>> 10,000 mg/kg (oral, rat)</i>	<i>369–490 mg/m3 (rat)</i>
<i>m-Xylene</i>	<i>15</i>	<i>108-38-3</i>	<i>5011 mg/kg (oral, rat)</i>	<i>7330 ppm/4 hrs (rat)</i>
<i>Solvent Naptha [petroleum], light aromatic</i>	<i>10</i>	<i>64742-95-6</i>	<i>N/AV</i>	<i>N/AV</i>
<i>N-butyl Acetate</i>	<i>2</i>	<i>123-86-4</i>	<i>14000 mg/kg (oral, rat)</i>	<i>N/AV</i>

N/AV = not available

ADDITIONAL EXERCISES

1. Check CAS Numbers

Part A

CAS numbers are made up of three groupings of numbers separated by hyphens. Which of the following look like valid MSDS CAS numbers?

Number on MSDS	Looks Like a CAS Number?	
a) 1314-13-2	<input type="checkbox"/> Yes	<input type="checkbox"/> No
b) 1257-4	<input type="checkbox"/> Yes	<input type="checkbox"/> No
c) 630-08-0	<input type="checkbox"/> Yes	<input type="checkbox"/> No
d) 96-2p-045	<input type="checkbox"/> Yes	<input type="checkbox"/> No
e) 26952-21-6	<input type="checkbox"/> Yes	<input type="checkbox"/> No

Part B

Use the sources referenced in this chapter (and on page 229) to check the CAS numbers for the following products:

Hazardous Ingredient	CAS Number on MSDS	CAS Number Correct?	
a) Acetic Acid	65-19-8	<input type="checkbox"/> Yes	<input type="checkbox"/> No
b) Isopropanol	67-63-0	<input type="checkbox"/> Yes	<input type="checkbox"/> No
c) Acetonitrile	75-05-8	<input type="checkbox"/> Yes	<input type="checkbox"/> No
d) Butyl Cellosolve	121-89-4	<input type="checkbox"/> Yes	<input type="checkbox"/> No
e) Xylene	133X***	<input type="checkbox"/> Yes	<input type="checkbox"/> No

Answer:

Part A

CAS numbers are made up of three groupings of numbers separated by hyphens. Which of the following look like valid MSDS CAS numbers?

Number on MSDS	Looks Like a CAS Number?	
a) 1314-13-2	<input checked="" type="checkbox"/> Yes (zinc oxide)	<input type="checkbox"/> No
b) 1257-4	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
c) 630-08-0	<input checked="" type="checkbox"/> Yes (carbon monoxide)	<input type="checkbox"/> No
d) 96-2p-045	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
e) 26952-21-6	<input checked="" type="checkbox"/> Yes (iso-octyl alcohol)	<input type="checkbox"/> No

Part B

Use the resources referenced in “Review Hazardous Ingredients” chapter (and on page 229) to check the CAS numbers for the following products.

Product	MSDS CAS Number	CAS Number Correct?		Correct CAS Number
a) Acetic Acid	65-19-8	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	64-19-7
b) Isopropanol	67-63-0	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
c) Acetonitrile	75-05-8	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
d) Butyl Cellosolve	121-89-4	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	111-76-2
e) Xylene	133X***	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	1330-20-7

2. Check Confidential Business Information

The MSDS provider has not disclosed hazardous ingredients information on the MSDSs for several products that you are importing into Canada. Which

confidential business information claims for the products listed below are valid in Canada?

Product	Hazardous Ingredients CBI Claim	Valid in Canada?	
a) Wax Be Gone	HMIRC #6789, filed on November 2, 2005	<input type="checkbox"/> Yes	<input type="checkbox"/> No
b) Shine Right	Proprietary Information withheld as permitted by SARA and CFR	<input type="checkbox"/> Yes	<input type="checkbox"/> No
c) Classic Cleaner	Registered Trade Secret	<input type="checkbox"/> Yes	<input type="checkbox"/> No
d) Fantastic Foamy	CBI #4321, granted on July 5, 2005	<input type="checkbox"/> Yes	<input type="checkbox"/> No

Answer:

Product	Hazardous Ingredients CBI Claim	Valid in Canada?	
a) Wax Be Gone	HMIRC #6789, filed on November 2, 2005	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
b) Shine Right	Proprietary Information withheld as permitted by SARA and CFR	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
c) Classic Cleaner	Registered Trade Secret	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
d) Fantastic Foamy	CBI #4321, granted on July 5, 2005	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No