Buyer Beware

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The Workplace Hazardous Materials Information System (WHMIS) guarantees workers a right essential to protecting their safety on the job - the right to know. But employers carry the responsibility of ensuring that this right is upheld. Under WHMIS, workers must have access to information about the safe storage, handling, production, use and disposal of the controlled products they use at work. If information from manufacturers or suppliers is not complete, this right is jeopardized. Incorrect information could pose added hazards.

The success of WHMIS depends on the quality of information available. Suppliers are required to provide all purchasers of their products with a material safety data sheet (MSDS) containing the pertinent hazard information, but employers - as purchasers of the products - are responsible for determining the accuracy and completeness of the information and passing it on to workers. The more thoroughly suppliers carry out their responsibility, the less the burden that is placed on employers. Ideally, MSDSs received from suppliers could be given a standard check and be changed little, if at all.

In actual practice, however, quality and completeness of MSDS information varies considerably. Few current MSDSs meet the standards set by WHMIS.

How to catch inconsistencies

Problems with classification still plague WHMIS administrators who may receive data sheets for similar products that are assigned very different hazard classification. This is only one of the difficulties that still need to be addressed as WHMIS embarks on its second year of existence. These hitches in the system force employers to assess the information they are given very carefully. But they must first be trained to be aware of potential deficiencies, learn how to spot errors, and know what to do to correct them.

Catching deficiencies on an MSDS requires a practiced eye, some healthy skepticism and much patient scrutiny of the information. Common sense and attention to detail are the keys to successfully assessing an MSDS. There are several possible resources available to help employers check the information, including product promotional or technical information, and their own knowledge and experience. The Canadian Centre for Occupational Health and Safety in Hamilton, Ont. can also be useful. One CCOHS database describes the properties of the ingredients of chemical products. This information can be compared against an MSDS to detect inconsistencies.

Cross referencing the data contained in the various sections of the MSDS can also help in detecting inconsistencies and inaccurate information. This means that data contained under the chemical, physical and toxicological properties, preventive measures and first aid sections of a particular MSDS should complement one another.

When reviewing an MSDS, an employer may realize that information provided does not match promotional or technical claims made for the product. In one case, a plumb-

ing cleaner's MSDS claimed the product contained only a single ingredient, a concentrated acid. In use this material would be highly corrosive. Promotional material claimed that the product also contained detergents - and a corrosion inhibitor. Omission of the detergents was probably not a serious error. However, corrosion inhibitors are complex substances which can have serious toxicological effects.

Some MSDSs claim that certain ingredients are not listed by OSHA (the United States Occupational Safety and Health Administration) or are not hazardous according to OSHA. References to OSHA are not acceptable under WHMIS. OSHA came into being in the early 1970s and many of its standards are outdated. An MSDS listing toxicological properties of a substance based on exposure standards established prior to 1987 must be updated.

Aside from the general guidelines given above, an MSDS must be carefully checked section by section for accuracy and completeness, first checking that the supplied form contains at least the minimum nine categories of product information required by law.

Product information identifies the controlled substance by brand name, chemical name and generic name, if applicable. This section also indicates the supplier's recommended use of the product and the name, address and emergency phone number of the manufacturer and supplier. When reviewing product information, be alert for suppliers who assign the same product identifier to two products with different formulae. This type of error is difficult to detect, but such duplication is not permitted under WHMIS.

Another deficiency that is difficult to detect is an unannounced change in product formulation. Suppliers are under no obligation to inform purchasers of formula changes as long as the MSDS reflects the change. Cross reference to previous MSDSs is the only way to detect such changes.

Hazardous ingredients indicates the identity and concentration of any ingredient in the substance that is a controlled product, that is included on the Ingredient Disclosure List of the *Controlled Products Regulations*, that is harmful to human health, or whose toxicological properties are unknown. This section also lists the product's CAS (Chemical Abstracts Service) registry number, UN (United Nations) and/or NA (North American) number, and LD_{50} and LC_{50} data.

Common deficiencies in hazardous ingredients information include excessive use of the phrases "proprietary mixture" and "no hazardous ingredients." Use of these terms is not permitted under WHMIS. On occasion, precautionary measures are prescribed for a product claiming no hazardous ingredients. Contradictory statements should be investigated. Misspelled chemical names should be checked using CAS or PIN numbers, and incorrect CAS or PIN numbers should be checked using the chemical -name of the ingredient.

Some suppliers classify a substance based on the properties of a partial list of its ingredients. This is unacceptable, and purchasers should request full disclosure of information. If there appears to be some inconsistency between the ingredients listed and claims made in promotional technical material, the MSDS may not contain a complete list of the hazardous ingredients in

the substance.

If you suspect that ingredients have been omitted, there are a number of possible explanations. The ingredients may not be hazardous or the product may not be a controlled product. Add the percentage composition of the listed ingredients to determine what percentage of the substance is unaccounted for. The absence of LD_{50} or LC_{50} data may indicate non-hazardous ingredients or incomplete preparation.

Another reason for this kind of lapse is the blending and repackaging of chemicals by the chemical industry. A single product can be blended several times, and each newly blended product requires classification and preparation of an MSDS.

Physical data lists detailed information about the properties of a substance, including its appearance, how it will react in certain situations, odour threshold, vapour pressure, vapour density, specific gravity, evaporation rate, boiling and freezing point, volatility, solubility, pH and coefficient of oil/water distribution. Look for unexpected changes listed in the physical properties section of the MSDS. These may indicate an unannounced change in formulation or a manufacturing error. Check against previously supplied MSDSs. Inconsistencies between the percentage volatiles fisted and the stated hazardous ingredients suggest that some, possibly hazardous, ingredients have not been listed.

Fire or explosion hazards describe conditions under which the substance becomes flammable and the correct method for putting out a fire. Other important information includes the substance's flash point, auto-ignition temperature, upper and lower flammable limits, hazardous combustion products, sensitivity to mechanical impact and static discharge and explosion data. On one MSDS, fire and explosion data for the product claimed that this information was not required because the solvent was a "safety solvent." This is unacceptable. Any discrepancy between hazardous combustion products and listed hazardous ingredients should be thoroughly investigated.

Reactivity data indicates conditions under which the product is unstable and the names of any materials with which it reacts. By-products of decomposition are also listed. Discrepancies between hazardous decomposition product information and hazardous ingredients information suggests an error in preparation or omission of one or more hazardous ingredients. Inconsistencies between reactivity data. and physical data, and inconsistencies within reactivity data also suggest an error or omission in preparation.

Toxicology data describes the effects of exposure to poisonous or infectious products. The substance's route of entry, acute and chronic exposure effects, exposure limits, irritancy, sensitization, carcinogenicity, mutagenicity, reproductive toxicity, teratogenicity and synergistic effects are also indicated. This section is usually poorly done. Very little toxicological information is available for the majority of substances in use.

Preventive measures explains in detail how to protect against the hazards posed by a substance. Engineering controls, personal protective equipment, handling procedures, storage and shipping information, clean-up procedures for leaks or spills and waste disposal methods are presented. Preventive measures is one area that frequently contains

information too vague to be of use to the purchaser. For example, the notation "use rubber gloves" is insufficient - there are many types of rubber, and not all will be appropriate for a given substance. If the listed preventive measures seem unusually stringent for normal handling, some hazardous ingredients may not be listed on the MSDS. Always check such anomalies with the product supplier.

First aid measures describes procedures to minimize injury following overexposure to a substance. First aid measures should always be consistent with the hazardous ingredients contained in a product. In addition, confirm the supplier's intent when statements such as "flush with plenty of water" appear on an MSDS. Such instructions usually mean the exposed areas should be flushed for 15 to 20 minutes, but it is best to clarify the instruction.

Preparation information lists the name and phone number of the group, department or person responsible for preparing the MSDS, and the date of preparation. Any MSDS prepared before January 1987 is invalid, and a new MSDS must be provided by the supplier.

Additional information may also appear on an MSDS. Because there is no standard format, many purchasers choose to transfer information from a supplier's form to an MSDS familiar to everyone in the workplace. The new MSDS must contain all information listed on the original, which must be accessible to all employees. The new MSDS must state that the supplier's MSDS is available for inspection.

The employer is liable

Section 13 of the *Hazardous Products Act* states that the employer is ultimately responsible for determining the quality of information regarding substances in the workplace. While employers can sympathize with the difficulty a supplier may face when preparing an MSDS, provincial compliance officers will not accept the argument that lack of proper information is the fault of the supplier.

Once discrepancies have been pinpointed, how should they be dealt with? Someone discovering an error, omission, inconsistency, ambiguity or other indicator of poor quality information should contact the supplier immediately. By law, the supplier must correct the deficiency and re-issue the MSDS. Reluctant suppliers may require reminding, ultimately from provincial and federal enforcement agencies. Some employers may be forced to issue an ultimatum and terminate their dealings with uncooperative suppliers.

While WHMIS opens the door to some information, it closes the door to other information - specifically, legitimate trade secrets. Applicants can seek exemption from disclosing information in several areas of an MSDS. These include:

- product identifier including chemical name, common name, generic name, trade name or brand name;
- supplier identifier;
- ingredients in a controlled product;
- concentration of ingredients in a controlled product; and
- toxicological studies that could indicate the ingredient.

WHMIS provides a formal procedure for organizations seeking exemption from disclosure. Under the *Hazardous Materials Information Review Act,* the supplier or employer must prove legitimate necessity to protect this information to the Hazardous

Materials Information Review Commission (HMIRC).

During review, the applicant must clearly indicate on the MSDS that this process is occurring. The statement must include the:
• statement of application for exemption;
• registry number; and
• date of the application.

If the application is unsuccessful, the supplier must re-issue the MSDS and provide full disclosure of all required information. If the application is successful, the MSDS must clearly indicate exemption. The statement must include the:
• statement of permitted exemption;
• registry number; and
• date of the decision granting the exemption.

The MSDS may also provide a generic description of the exempted ingredients and the percentage of their concentration. However, the exemption may also include the percentage occurrence of the ingredient. The exemption is valid for three years.

Fulfilling employer obligations

The employer is left to determine how best to address legal obligations when using controlled products granted exemption from disclosure. The employer may never learn the identity of ingredients in a wide array of controlled products, especially if the product is withdrawn from the market or reformulated.

At some point purchasers of products exempted from disclosure face a decision: to buy or not to buy. For some, substitute products are available. In this case the decision is an easy one. However, for employers who use an exempted product that is an essential ingredient in a process there is no choice. They must buy the exempted product.

Some employers are reluctant to accept recommendations on the exempted product's MSDS. One possible solution is a disclosure agreement negotiated with the manufacturer or supplier. A supplier wanting business may be willing to consider this alternative. However, resistance is likely, especially in the case of imported products, since there is nothing to stop an employer from purchasing from a competitor once the formula is known.

Another approach is to involve a third party, such as an industrial hygiene consultant. A consultant could operate at arm's length, assessing the situation using the proprietary information. The consultant would then report conclusions and recommendations to the user.

Another alternative is to request the manufacturer or supplier to assess the workplace environment. This approach can cause problems since the manufacturer or supplier gains access to the user's plant. The liability arising from misjudgment may then also fall on the manufacturer or supplier.

The manufacturer or supplier could approach this request in two ways. The first is to commission an industrial hygiene consultant to conduct air sampling, necessitating a disclosure agreement between the consultant and the manufacturer or supplier. The consultant would then report conclusions and recommendations to the user. An alternative approach involves air sampling conducted by the manufacturer or supplier. The manufacturer or supplier would report conclusions and recommendations to the user. However, this

approach introduces potential bias, since the testing personnel owe allegiance to their employer.

Uncertainty surrounding MSDS quality will only be resolved when definitions of controlled products become more precise, and employers receive more useful and accurate information for products exempted under WHMIS legislation. However, quality of information will improve only as users recognize inferior information and demand an improvement.

Deficiencies in Material Safety Data Sheets	
Deficiency	**Comment**
General overuse of "not applicable" or "not available"	• lack of product testing, inadequate research
phoney claim for exemption from disclosure	• difficult to detect; demand proof if uncertain
inconsistency between sections	• potential errors in preparation
overstatement or understatement	• difficult to detect • inadequate research • error in preparation
information used out of context	• difficult to detect • inadequate research • error in preparation
reference to OSHA	• not permitted under WHMIS • OSHA is American legislation • hazard disclosure in the U.S. differs from WHMIS in several important areas
use of OSHA Form 20 or Form 174	• not permitted under WHMIS • these forms lack some of the headings required by WHMIS
overly cautious statements for storage, handling and use of a noncontrolled product	• product probably is a controlled product
Product Information two products from a supplier that have the same Product Identifier but different formulas	• not permitted under WHMIS • very difficult to catch
no emergency telephone number	• required under WHMIS
unannounced change in formulation	• legal as long as the MSDS reflects the change • the user must find these changes by inspecting a previous MSDS
Hazardous Ingredients proprietary information/mixture	• not permitted under WHMIS

trade secret	• not permitted under WHMIS
no hazardous ingredients according to OSHA	• not permitted under WHMIS
misspelled chemical name	• check using the CAS or PIN
mixup in CAS or PIN	• check using the chemical name of the ingredient
classification based only on some of the ingredients in the product	• not permitted under WHMIS
inconsistency between ingredients listed and claims made in promotional technical material	• MSDS may not list all hazardous ingredients
unlisted ingredients	• check against percentage composition • ingredients may not be hazardous • product not a Controlled Product • Hazardous Ingredients not listed
ingredients not listed in the Ingredient Disclosure List and not identified as hazardous	• MSDS must disclose all ingredients fitting the conditions of Section 13 (Hazardous Products Act)
percentages do not add to 100 %	• unlisted ingredients not hazardous • unlisted hazardous ingredients
missing LD_{50} or LC_{50}	• ingredients not hazardous • incomplete preparation
Physical Data unexpected change in physical properties	• unannounced change in formulation or error in manufacture. See current and previous MSDS
data applies to a single ingredient, not the entire controlled product	• potential error in preparation • lack of product testing
incorrect/inconsistent temperatures	• faulty conversion from Fahrenheit to Celsius
temperatures stated in $^{\circ}F$	• this is permissible, but could cause problems in usage
inconsistency between % volatiles and stated Hazardous Ingredients	• not all (hazardous) ingredient(s) listed

inconsistencies within Physical Data	• some (hazardous) ingredient(s) not listed • reliance on information about single ingredients • error in preparation
Fire and Explosion Data discrepancy between Hazardous Combustion Products and Hazardous Ingredients	• some (hazardous) ingredient(s) not listed • error in preparation
claim that this information is not required since the solvent is a "safety solvent"	• not acceptable under WHMIS
Reactivity Data discrepancy between Hazardous Decomposition Products and Hazardous Ingredients	• some (hazardous) ingredient(s) not listed • error in preparation
inconsistencies between Reactivity Data and Physical Data	• some (hazardous) ingredient(s) not listed • error in preparation
inconsistencies within Reactivity Data	• some (hazardous) ingredient(s) not listed • error in preparation
Toxicological Properties exposure standards dated before 1999	• updated MSDS required
Preventive Measures overly stringent Preventive Measures for normal handling	• difficult to recognize • these may be appropriate only for emergency use • some (hazardous) ingredient(s) not listed
use good ventilation	• too vague
provide sufficient air changes per hour	• too vague
use protective gloves/clothing	• too vague
use rubber gloves	• too vague – there are many types of ‘rubber’
use impervious clothing	• too vague – there are many fabrics in use; each has different properties

avoid skin contact	• too vague • specific methods required
use suitable absorbing material	• too vague – there are many absorbents and some adsorbents in use; each has different properties
Preventive Measures inappropriate (too stringent or too lenient) to the Product	• error in preparation • difficult to detect
First Aid Measures first aid measures inconsistent with Hazardous Ingredients	• some (hazardous) ingredient(s) not listed • error in preparation
flush with plenty of water	• usually means 15 to 20 minutes
Preparation Information no author listed	• required under WHMIS
prepared before January, 1987	• updated MSDS required