RESEARCH TASK – CHEMICAL SAFETY

Background

A working knowledge of how to find out about the hazards of chemicals is important in many areas. The use and abuse of chemicals is not restricted to specialist laboratories or industries. Chemicals include common household products such as cleaning agents, fuels, pesticides, food additives and drugs as well as industrial and natural pollutants. Whatever your field of employment in the future, you will not be expected to have a photographic memory of chemical hazards. If you are a practising scientist, a health professional or a teacher, assessing chemical hazards and risks will be part of your daily life. As an educated consumer and voter, there will be many situations where being able to source this information will be important.

A Material Safety Data Sheet (MSDS) is a written document that provides information on the storage, first aid, spill response, safe disposal, toxicity and flammability of a substance, as well as a summary of its physical and chemical properties. It contains a lot of technical data but the knowledge of the language of chemistry you already have will be sufficient to extract useful information.

Being able to memorise information for high school examinations is a wonderful skill but of little real value to you or your employer. Of much greater value are the skills of being able to retrieve information and evaluate its reliability. The internet is, of course, the first place to begin most searches. However, it is the responsibility of the searcher to assess the quality and trustworthiness of the information. This is always true. It can be a matter of life and death for you, your patient or co-workers when safety is concerned. Citing the origin of information in any written report goes hand in hand with this – others will want to locate your sources and assess the credibility of your work*

Choosing sources

The internet is a public forum. Anyone can post a website and make a claim or assertion. Just because an article located by a search engine is relevant to your research topic does not guarantee it is reliable. It is your responsibility as a researcher to find and use trustworthy sources. There is no foolproof way of doing this and the following advice should be the minimum effort that you should go to.

In most cases, you should be wary of sites that do not list an author. If authors are named, you should try to determine their credentials such as their employer or sponsor and make a judgement on the likely reliability and impartiality of the information.

If the website name has .edu in its address, it is most likely an educational institution. Even so, you should be aware of bogus sites and bias. It is a good idea to put the URL of the site’s homepage into a search engine to see if anyone has reported such problems.

Websites with .gov in their address are usually reliable government sites. Government sites are usually good sources for statistics and objective reports.

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* It is also professional to acknowledge the creator for their work just as you will expect others to give you credit for your work. Your reasons for citing work are not just to avoid being accused of plagiarism.
Websites with .org in their address are usually non-profit organisations. Such sites are often excellent sources but they can also be the poorest as such organisations often have their own agendas or political biases.

Television, newspapers and magazines websites have the same errors, biases and agendas as traditional media. They are most useful when used as a stepping stone to primary sources.

Commonly used sources that you should be very cautious about using include:
- Blogs and personal websites. Unless you can independently assess the writer’s level of expertise, you may as well ask the opinion of the person in front of you at the bus stop.
- Wiki sites. As these allow people to add and edit information, they need to very well run to be relied on. Wikipedia is an exception - it is now mature enough to be very useful for providing overviews on topics and for links to other sites.
- Movies, newspapers, popular magazines and TV shows. These are primarily interested in entertaining you or selling you something. They sometimes make gross scientific errors in an effort to do this or through ignorance.

A search engine is an excellent place to start your research. Whilst good search engines make some effort to remove sites that might be deemed offensive, they do not and cannot assess reliability of sites on specific topics. The order that hits are given to you is related to many factors, including commercial interest and how the search engines software deems the relevance of each website to the query you entered. The first hit on the list is not necessarily the best and certainly not the only source you should use.

**When evaluating sources on the web, use your common sense.** Just because it’s easy to find, does not mean that it’s credible, reliable, or even true.

The Library has a number of resources on research and information skills: www.library.usyd.edu.au/skills

**Learning Outcomes and Skills**

The task develops a number of important generic and professional attributes, including Faculty of Science graduate attributes concerning information literacy:

- an ability to make value judgements about the reliability and relevance of information in a scientific context
- an ability to use a range of sources of information (such as catalogues and databases) effectively and to find desired information efficiently (searching)

**The Task**

You will perform online research to obtain hazard information on some common chemicals. You will use the web to find definitions for various acronyms which are commonly used in MSDS.

You can have multiple attempts at the quiz and your last attempt will be recorded:
- Go on to the quiz and read the questions
- Using this information, **conduct** the necessary research to answer the questions
- Use this research to make your proper attempt at the quiz