

Welcome to the Wonderful World of Waste

and the School Laboratory

Part I

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This article, and the following parts, aim to answer the most common and pressing questions that come up when the topic of chemical disposal from laboratories is discussed. I hope to answer all your questions and more, and to provide a guide to correctly prepare and legally handle, store, and dispose of all your laboratory wastes.

Let's start with some definitions: what is chemical waste?

Chemical waste is any chemical that can be classified as prescribed industrial waste (PIW) which is a legal term from the *Environment Protection Industrial Waste Resource) Regulations 2009* which are referenced in the *Environment Protection Act 1970*. 'Prescribed' just means that there is a listing of chemical types and if the waste from your laboratory can be found on this prescribed waste list then it comes under the Act and associated Regulations as administered in Victoria by the Environment Protection Authority (EPA). A rather lengthy definition, but in simple terms, if the waste type is on the list then it requires transport by EPA permitted transport from the disposer (you) to the disposal or treatment site, and the treatment plant must be licensed by EPA.

When we fill out the five-part EPA paperwork after collecting your chemical waste, all parties in the transaction are complying with the above Regulation. This is a legal requirement.

Rule Number 1: You must use a waste transporter who has a permit issued by EPA, who issues the relevant copies of the transport certificate and who transports the waste to a licensed treatment plant.

The first and most important aspect of chemical waste disposal is that you must use a company with an EPA permit to transport the chemicals, and they must transport to a premises that is licensed to receive that type of waste. You, the disposer, must receive two coloured copies of the EPA paperwork from the transporter, these are the pink and green copies. You, as the disposer, must post the pink copy to EPA within seven days and retain

the green one for 24 months. If you are ever audited by WorkCover, for example, they may wish to see your green EPA copies to prove that you have complied with the above Regulation. Treat it as a legal document. The pink and green copies of the EPA documents must contain details of the transporter and their permit number, as well as the proposed treatment site.

Laboratory chemicals are on the prescribed list, as are empty containers, waste from chemical spills, waste oils, medical wastes (such as a yellow sharps container from a sick room), acids, alkalis, paints and solvents. In fact, just about all chemical waste encountered in school laboratories is on the prescribed list. Wastes that are not on the prescribed wastes list include e-wastes, green waste, radioactive, explosives and gas bottles, batteries, and tyres.

Rule Number 2: Treat your chemical waste as a dangerous good.

The dangerous goods system applies primarily to the *transport* of dangerous goods and secondly to the *storage*



PICTURE: Chemical Waste must be handled in accordance with the Dangerous Goods system

of dangerous goods. The relatively small amounts of chemicals held in laboratories will usually provide some exemptions to the storage requirements, but the potential chemical reactions are just of a smaller scale. These reactions can involve a fire, explosion and chemical reactions resulting in emission of poisonous or corrosive gases - all scenarios unwelcome in a laboratory of any size.

Dangerous goods are chemicals that have physical and chemical properties that place them into one of the 9 major classes. Flammable liquids, which are Class 3, have a flash point of below 60°C. Flash point is the lowest temperature at which vapour from the liquid can be ignited. For example, petrol has a flash point of around -15°C. As mentioned above, school laboratories do not normally have enough dangerous goods to trigger compliance with the *Dangerous Goods (storage and handling) Regulations*, but because the dangerous goods system is based on actual chemical properties, it is still an excellent and unrivalled system for safely storing and handling your laboratory chemicals. It is just a matter of scale. From the definition of waste from part 1, it will be obvious that some of your chemical wastes will also be dangerous goods. Chemicals that are surplus to your requirements or have passed their used by date are now classified as chemical wastes, but the properties remain the same. Waste flammable liquid is still a flammable liquid and therefore a Class 3 dangerous good. Waste is not a dangerous goods classification and any chemical waste you generate from the laboratory must be handled in accordance with the dangerous goods system as well as the EPA requirements. Sulphuric acid waste is exactly the same as sulphuric acid in a new bottle, as far as the dangerous goods regulations are concerned.

The ramifications of the dangerous goods system as applied to your laboratory can be summarised in the requirement for storage away from incompatible dangerous goods (acids and alkalis for example), labelling (the labelling of your chemicals under the GHS is in addition to any dg requirement) and the maintenance of a chemical manifest. The manifest should include all the required GHS and DG data.

Remember the GHS system applies to exposure to hazardous substances during the use of chemicals that



PICTURE: The properties of your chemicals do not change once they become 'waste'.

are hazardous substances, but there is plenty of overlap between the DG and GHS systems. There is a summary sheet on the GHS for schools on the www.envirostore.com.au website.

If your waste is not a dangerous good, you may store and handle without reference to the DG system, but labelling requirements are unchanged. *Non-hazardous* is not a DG classification.

In the next edition of Lablines we will deal with the labelling of chemical wastes in detail, but remember, when your waste is a dangerous good, or was once a dangerous good, it remains one and must be treated in the same way as a dangerous good. Chemical and physical properties do **not** go away when something becomes waste.

The next edition will cover labelling, suitable containers for waste, in-house treatments and anything else I can think of between then and now.

Your comments and questions are welcome and you can either contact myself directly, or Jessica Boys, the Lablines editor.