Welcome to the Wonderful World of Waste and the School Laboratory part 2

Michael Pola Envirostore Chemical Consulting mike@envirostore.com.au

This second part will deal with some of the issues that we waste disposers find most at fault when collecting chemicals from school laboratories. That is, labelling your wastes and the use of incorrect containers to store the wastes

Labels are sources of information, not opportunities to be clever (by just using a chemical formula and nothing else ), obfuscating (by using codes), unhelpful (by forgetting important bits) or minimalist (by putting very little information). A good label will, without ambiguity, inform any reader what the container has contained therein. You can rarely put too much information on a label and the opposite is too commonly true. An incorrect label is also a big no-no and can cause chemical heartache and consternation when the waste is worked on while disposing.

The correct label will contain the chemical name, its concentration if applicable which it is in the case of mineral acids. Dilute sulphuric and nitric acids are vastly different from the concentrated versions; the presence of any dangerous good such as a solvent: the best example of this is the ethanol solution of phenolphthalein which looks like a water solution. The date of preparation is useful as is the initial or name of the preparer in case there are any queries. As disposers and because the waste is to be transported any dangerous goods requirements such as a diamond or UN number will be also useful. Labelling to GHS requirements is not so important and there are exemptions when dealing with waste. Remember that labelling to the GHS is a requirement of the hazardous substances regulations which deal with the hazards of exposure while using the material. Dangerous goods rules are for transport and storage, not exposure. If you want to put GHS compliant labels on your waste, feel free but the over riding requirement will be DG because there is a transport aspect. The waste man is not looking for hazardous substances labelling, the name of the chemical is of prime importance because this will indicate if a dangerous good which in turn reveals the chemical and/or physical properties.

Mixtures of chemical wastes such as those you consolidate in a carboy should be labelled to show all the ingredients. There is no requirement to provide a safety data sheet for wastes especially for consolidated mixtures as it would need to be specially prepared by you although if the waste is a single chemical you will probably have a SDS for it and most times we don't need one. The exception to this is when you are disposing of commercial products which are chemical mixtures. The SDS will hopefully list the ingredients. Some waste companies may require safety data sheets for your wastes before they can provide a quote, but consolidated mixtures will be difficult. You can always hand over data sheets for every ingredient and this is fairly common with industry

A common form of waste is of course the unlabelled or unknown chemical. This is an excellent reason to get rid of a chemical because you don't know what it is, or its label has come off. We understand unknowns do occur so just label them as just that-unknown chemical with lost label. If you want to have an educated guess go ahead, we must work out what it is before we can dispose of it, so any help is of use. Don't be surprised however if a waste company won't take your unknowns - it won't happen with us however

The following is a list of unsuitable containers to hold your chemical wastes.
-glass and plastic food containers such as milk and juice containers
-glass jars

-containers that can't be properly sealed, or which don't have proper closures
-plastic bags
-tins

Etc etc. If you need containers we can supply 10 litre dangerous goods approved carboys at no charge. You just pay for the contents when full. If 10 litres is too large a volume, then try to use proper laboratory jars such as Schott bottles or second-hand chemical containers such as Winchester bottles which are 2.5 litre volume. And don't forget to change the label and if required rinse out the original contents. Stoppered glass bottles are not always suitable if the stopper is not a good fit.
A dangerous goods compliant container will have a series of numbers embossed on the sides or top of the container preceded by the UN symbol.

Consolidating your liquid wastes into a 10l carboy will be cheaper than disposing of a lot of smaller volume containers as the waste man won't have to get rid of the empties. Not all wastes can be consolidated of course and there are a few rules to follow generally before more chemically specific advice is required.
The easiest consolidation is the flammable liquids and includes many non-flammable organic liquids such as oils. You can add together alcohols, esters, ketones, thinners and kero, turps and other household solvents, even small volumes of chlorinated solvents such as dichloromethane and methylene chloride. Any indicator and stain solutions even if aqueous and organic acids such as acetic and formic and oleic. The only organic liquid to avoid is any isocyanate which the catalyst or activator for polyurethane two-part paints. Call to check if unsure

Of the inorganics and aqueous liquids all we can really advise in a general sense is to pH match, ie low pH with low pH and the high pH with same. Adding acid to alkali can result in heating and vigorous reaction especially if one of the solutions is strong. Remember the pH scale is for dilute acids and alkalis and is not suitable for concentrated acids and alkalis.

There are a few other safe consolidations (photographic wastes is one but now diminishing) but it is best to check with a chemist or the text books before trying and you can always ask us.

The next article will look at special needs wastes such as infectious and medical type, radioactive, mercury, explosives and reactive chemicals, disposal to the sink and whatever else I can think of. If there is any topic you would like discussed, please get in touch. Your comments and feedback are always welcome