

Welcome to The Wonderful World of Waste

This quarter's article looks at some myths in the laboratory and updates the EPA Portal

First some myths. You can use sand or soil to soak up a liquid chemical spill. Wrong, sand is silicon dioxide, completely insoluble in most things except hydrofluoric acid (and yes I have seen a MSDS which recommended using sand for a HF spill. Further evidence that many MSDS and their modern version the SDS are works of fiction and error) The only use of sand I can think of is to use it as a physical barrier for a large spill to enclose it while you apply a real absorbent like vermiculite or other mineral based material.

Use powdered sulphur for a mercury spill; wrong again, you will just cover the mercury with the sulphur which may help in keeping the mercury vapour down a bit but there is no actual reaction. Mercury is a liquid metal with a strong affinity for other metal with which it forms solid amalgams. Amalgamation is the property to use against the mercury to convert it from a liquid emitting mercury vapour to a solid metal with zero emission. Tooth fillings are based on this property with various metal mixtures containing copper, tin and silver amalgamating with mercury to form a very strong filling. And there is no evidence of any mercury vapour being emitted from amalgam fillings . A dentist told me ceramic fillings do have a shelf life and will require replacing but the amalgam fillings are virtually permanent. Use zinc granules (not the powder) on a mercury spill to form a zinc amalgam which is a solid and easily swept up.

Use lead to shield radioactive materials. Not strictly correct , lead is the shield material of choice for gamma emitters such as Co 60 and alpha emitters such as Am 241 (found in smoke detectors) but won't shield a beta particle emitter such as Sr 90. Beta particles are shielded by aluminium. The presence of radioactive sources in the school lab is usually to show the various shielding efficacy per particle type and to demonstrate the inverse square rule using a Gieger Muller tube detector. The counts at one meter will be a quarter that at two meters (the reciprocal of two squared = 1/4) and one ninth at three meters etc.

Store your chemicals on shelves in alphabetical order. Au contraire. They are best stored according to dangerous goods class , preferably within dedicated cabinets and observing the segregation rules from the dangerous goods rules. The main segregation is to keep class 5.1 oxidisers away from class 3 flammable liquids. Also acids and alkalis are both class 8 corrosives but need to be kept separate. The only chemicals that can be stored in alphabetical order are the non dangerous items which are called zone 0 chemicals in schools. And the class 3 cabinet needs to be vented externally . There is no requirement to have any of the other cabinets vented. In the acids cabinet have some sodium carbonate anhydrous (soda ash) in a dish to absorb any fugitive acid vapours but the use of screw topped bottles and not stoppered glass bottles will considerably reduce the chance of any vapours. These class 8 cabinets are now available in plastic and with a physical partition within so that acids and alkalis can be stored within the same cabinet. The dangerous goods rules apply to transport (which is not an issue for schools) but also to storage which certainly is applicable only on a small scale. And remember the dangerous goods system is based on physical and chemical properties that don't change when a chemical becomes waste if it is to be disposed of. Those pesky chemical properties such as flammability, toxicity, dangerous when wet etc don't disappear just because a chemical is no longer required.

Enough myths, an update on the use of electronic transport certificates which have been mandatory since July 1 last year. The biggest problem for most people is that you must use the Windows Internet Explorer web browser to complete the certificates. No chrome or safari or firefox. All disposers of chemical waste including schools must register on the EPA Portal as a

waste producer. Register as a business , the school ABN (Australian Business Number -ask the boss or the Bursar) has to be added and the reason why registration is sought is to do waste transport certificates. You will receive a login name which is an email and a password within a day or two of completing the registration. Fairly painless. Once registered we will help you complete the certificate when we collect your chemical wastes . The days of those coloured paper certificates one of which you had to post to the EPA and one which had to be retained for two years, are gone. By all means contact us if you need any assistance . You are the disposer or producer of waste so you have to register. We are already registered as transporters of waste and treaters of waste. The third party in the chain is you.

Next article we will have a look at spill kits and PPE and safety equipment.

Feel free to contact us or the new editor Samantha Gunning for any comments or for any topics you would like discussed