**HAZCHEM Codes:** a little bit of history with thanks to Peter Cope Senior Scientific Adviser to the London Fire Brigade and Bureau Veritas

Still referred to as HAZCHEM Codes in New Zealand they have for many years been called Emergency Action Codes in their country of origin - the UK.

Originally developed by three members of the London Fire Brigade and championed by their Divisional Officer in the early 70's. D.O. Clisby pushed the Home Office to adopt the system as a nationwide means of marking bulk loads of hazardous chemicals for transportation in 1975.

The system faced competition from the European ADR Kemmler code, based system and requirements to include ever more detailed information - UN Numbers, Hazard Class, Tremcard number and proper shipping names. Most of these are very familiar in this country now as well.

HAZCHEM Codes themselves largely stand apart from the legally required signage under our Health and Safety at Work (Hazardous Substances) Regulations 2017 and Land Transport legislation, though the word HAZCHEM (but not the Code) is now required by Regulation 2.6 as a general duty signage requirement.

The original concept is and remains remarkably simple and effective providing an immediate emergency response statement to enable the risk from the hazardous substance to be managed at least in the first instance.

And some personal thoughts from my experience:

I would add here that while matrices exist to Code for multiple hazards, the system is most effective when there is a unique Code per substance. That may, and in my opinion should result in multiple Codes for multiple facilities even on the same premises.

Usage in New Zealand has essentially remained true to this original "rather neat risk assessment" and its intended use even while the UK and others, especially the European Union have moved on, that is, I believe to the detriment of that simplicity.

Can they be improved? It really is rather difficult to see how they could be in concept at least. There are a few anomalies that probably should be addressed; to explain using some examples:

The Code for petrol is 3YE. As you will see from the example, the fire would be fought with foam indicated by the 3, the 'Y' is accompanied by a 'Z' meaning the reaction could be violent, the FENZ crew protection is normal firefighting kit, there is a requirement to contain any fuel spillage / fire water / foam, and there is a need to consider evacuation denoted by the 'E'. Nothing much wrong with that.

But, do we really want to fight such a fire or is the environment better served by allowing the fire to burn efficiently?

Take a dangerous goods store with multiple flammable hazardous substances, again all 3YE, none of the solvents or fuels incompatible but in combination if solubilised by foam, the volume increased by the water used, and the combustion reduced in efficiency to the point of evolving significant quantities of toxic high particulate smoke, an argument could be made to let it burn. And it should be encouraged to burn as hot as possible to take the combustion products back as close as possible to elemental chemistry while protecting the exposures (other buildings or property) with water spray.

**So maybe:**

The 'E' could be redesignated to 'Consider the Environment.' Like the EPA requirement this would be the environment in its widest sense - people, the natural environment, and the built environment. It would still mean evacuation of people if that was called for, but the consideration would also involve a decision on potential environmental effects and maybe a decision not to fight the fire as a result.

Another and perhaps more pertinent example:

The HAZCHEM Code for concentrated sulphuric acid is 2P - fine water spray, violent reaction, full protective suits and dilute - really? All Code letters P to T involve the emergency action to dilute. In today's environment you would not even apply that action to milk. There are very few miscible liquid hazardous substances that you would want to discharge to the environment with dilution as the only action. The EPA Hazardous Substances Disposal Notice 2017 does not recognise dilution as a suitable disposal method. Why should emergency action be any different?

**So maybe:**

Containment is the control method for Code letters W to Z, so that control should really apply to all action codes from P to Z.

Why you might ask does the Code start at P (with the exception of E) - that again originated in London where the Fire Districts radio call signs of that city ran from A to L and there was a desire to avoid confusion.

HAZCHEM Codes in New Zealand are backed up by the Health and Safety at Work (Hazardous Substances) Regulations 2017: Part 2 – Signage: Regulations 2.5 – 2.10. This includes but is not limited to the word HAZCHEM for classes 2,3,4,5,6 or 8 substances, a hazard pictogram (Diamond); or a hazard statement, and the precautions to be taken and describing the immediate actions in the event of emergency.

The latter commonly requires 111 - Fire, Ambulance, Police, a 24 hour company contact number which may be a security company, an information number for the substance; 0800POISONS, 0800CHEMCALL typically, or a NZ Chemical Supplier plus often the appropriate Regional Council Pollution Control Hotline for EPA compliance.

All good stuff, but for a first arriving fire officer faced with a HAZCHEM Code of 3Z, the immediate response is very clear, and speed is what saves your company premises, limits your insurance claim, protects the wider environment and that includes jobs. 3Z by the way covers Diesel.

