FLASHPOINT

Summer 2012

Fire service HSNO response.

Earth and Energy – A human solution?

NZ INSTITUTE OF HAZARDOUS SUBSTANCES MANAGEMENT

USEFUL ORGANISATIONAL CONTACTS

NZ Institute of Hazardous Substances Management

(formerly the Dangerous Goods Inspectors Institute)

www.nzihsm.org.nz

The official home of professionals committed to the safe management of hazardous substances and dangerous goods.

The NZIHSM is a 'not for profit' industry association specialising in improving safety, health and (site) environmental performance, particularly the safe management of hazardous substances in the community.

Responsible Care NZ

www.responsiblecarenz.com

Box 5557 Wellington 6145

Responsible Care NZ works closely with industry partners to successfully implement the Hazardous Substances legislation. This is achieved by implementing and promoting the international SH&E protection initiative practised by the chemical industry in more than 53 countries world-wide.

The NZIHSM works alongside Responsible Care NZ to enhance professional knowledge and capability.

Environmental Protection Agency

www.epa.govt.nz

The Agency administer the HSNO Act and provide policy, publications, technical reports and extensive information on working with Hazardous substances''

NZ Fire Service

www.fire.org.nz

Provide practical advice to premises for dealing with the HSNO requirements under the Fire Services Act.

Department of Building and Housing

www.dbh.govt.nz

The Government agency that maintains the Building Act and the Building Code.

Local Government NZ

www.lgnz.co.nz/lg-sector/maps/

Local Authorities have responsibility for policing building controls. Some local authorities are contracted to Department of Labour to provide enforcement of the Hazardous Substances legislation.

If you know of other agencies which could be useful to members, please let us know at office@nzihsm.org.nz.

Shared responsibility sensible!

Tales of tragedy and its aftermath still dominate our news, some directly relevant to the HSNO regime and others of general interest.

The Pike River enquiry continues with focus on the need for independent inspections and the controls required for ignition sources in areas where flammable gas mixtures could exist and the possible absence of functional gas monitoring. Sound familiar? Controls around oil containers have been highlighted with the grounding of the 'Rena'. Also, public expectations, requirements and risks of independent inspections are being highlighted in the Canterbury earthquake commission investigations.

While many of us may feel relieved that these incidents are not directly attributed to shortfalls in HSNO enforcement and inspections, the public seem to have high standards when it comes to inspection and enforcement services in the case of an incident and seem to oppose any perception of taking 'short-cuts' which could be a reminder for us all.

We in the NZIHSM are fortunate in this edition to have a variety of articles from the NZ Fire Service in how they are responding to potential HSNO challenges.

On the work front, various certifiers have reported LPG enquiries from sites that have been told by suppliers to gain certification before continued supply. While the HSNO Act makes the 'person in charge' responsible for site safety, not all owners possess the knowledge to recognise risk from hazardous substances! Ensuring suppliers, who have the knowledge and supply the chemicals, share responsibility to check a safe location or at the least that suitable certification is in place prior to delivery is indeed a positive move.

Enjoy the read. Here's hoping that 2012 will be a good year for us ALL!
– John Hickey, president.

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Firefighters battle the VJ Distributors fire.
Kerry Marshall (Kampic)

Flashpoint

Flashpoint is the official journal of the NZ Institute of Hazardous Substances Management.

Editorial material does not necessarily reflect the views and opinions of the Institute.

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Fire service meeting HSNO response challenge

Over recent years, the New Zealand Fire Service has pursued an active policy of developing its HSNO response capability, spurred on by lessons learned at major events such as Tamahere and the big distribution warehouse fire in Napier.

The programme actually has its roots back in the 1980s after the major ICI fire in Auckland, but has gathered momentum in the last few years. It has coincided with a push to universality and inter-changability of appliances and equipment, meaning relief crews from anywhere in the country can be drafted and work with familiar equipment.

The ability to roster crews through Christchurch after the earthquakes proved the success of that thinking.

The lessons have been well-learned," said Paul McGill, Director of Operations and Training for the New Zealand Fire Service, "and acted on to the point where New Zealand has a world-class capability for small and medium-sized incidents (in world terms).

"To us, one 'small' petro-chemical installation is likely to be our 'major' incident. Those facilities are mainly in rural areas where they can be contained. The biggest problem for the NZFS will probably be a fire or explosion in a city industrial area where peripheral damage, fire spread, public evacuation and wide-spread air pollution over an urban area can all roll out together."

The NZFS has built 17 specialised hazmat/command vehicles spread around the country so a response within 20 minutes is achievable in urban areas and 60 minutes in rural areas is achievable 90% of the time, said Paul. "These vehicles have proved their worth in co-ordinating the response of all participating agencies."

"We needed a more systematic approach to hazardous substances incidents and we now have the capability to deal with a wide variety of incidents and give support to the public and agencies with modern decontamination procedures."

The NZFS has developed a hazardous materials technical manual that covers legislation, toxicology (exposure and response management), packaging (containers

A potential nightmare: bags of chemicals tossed awry during the Christchurch September earthquake. Poorly-documented stores in such cases mean no-one knows what they are potntially dealing with. Photo: FTD Magazine.

and transportation resources), render safe (mitigation, containment and decontamination) and specific incidents. Nine appendices provide additional information on science, dangerous goods air and sea, safety data sheets, hazardous substances and dangerous goods classification chart, absorbents, glossary, decontamination systems, limited use gas suits and disposable splash suits.

"As NZIHSM members will be aware, it is a complex subject where potentially we can be dealing with cocktails of poorly-documented chemical stores. It is in everybody's interests to educate the commercial world into total transparency and we appreciate everything test certifiers do in respect of this," said Paul.

Minor liquid or gas leak or spillage is the major 'everyday' HSNO work for the NZFS, he said, but there is an increasing workload relating to the discovery of clandestine laboratories, either through attending a fire or explosion or assisting Police with decontamination.

Ask questions before, rather than after...

Lessons learned from major incidents

The distribution warehouse fire in Napier resulted in the New Zealand Fire Service improving its command and control procedures with the inclusion of a specific role for an incident ground safety officer.

This officer has responsibility not only for firefighter safety at the incident, but for ensuring follow-up monitoring and treatment is carried out, said Paul McGill, Director of Operations and Training for the New Zealand Fire Service.

The lessons from Tamahere can be summarised as:

- the need for premises to be properly inspected and compliant with legislation and their location test certificate and to have an approved evacuation scheme (if required);
- the recognition of the dangers associated with LPG as a refrigerant and the use of

Firefighters wade through a blanket of firefoighting foam after the VJ Distributors fire in 2006 in Napier. The incident caused the evacuation of about 70 homes because of toxic smoke fuelled by oil (about 200,000 litres was stored on site) and cleaning products stored in bulk containers. The warehouse was completely destroyed, five houses were damaged and a number of houses downwind were covered in oil smoke. It took the fire service over five hours to bring the hazardous substances fire under control, using about 105 personnel, 15 appliances, an aerial unit and command unit. Environmental officers also worked hard to minimise the environmental damage, after a nearby stream had been contaminated and there was a lot of oil in the drains. A dam was set up in the stormwater system and effluent trucks were used to recover the oil. Photo: Kerry Marshall (Kampic)

appropriate safety systems in the installation;

- the importance of pre-incident planning, both from an NZFS need and for the owner in terms of HSNO emergency response plans appropriate to the hazardous substances, activity and likely events. Also the need for both types of plans to be complimentary.

Firefighters, police, council and construction workers pour over the collapsed CTV building in Christchurch. Photo: Barcroft Media.

Paul said the lessons learned from the Christchurch earthquakes are still being analysed, but generally were:

- around the need for rapid support of local resources;
- the impact of a large incident on command and control across many individual incidents;
- the use of standard documentation to assist with the preparation of incident action plans and the development of situation reports;
- the reinforcement of the value of a welfare plan to provide on-going support for all staff that are affected by these events.

"Area Manager Dan Coward said at the time that even the most hardened of firefighters had seen things they never thought to see in their careers. I'm sure that applies to all who particpated in the aftermath of the disaster and we must not forget that the emotional impact of the quakes may be felt for many years to come."

A bouquet on the burned-out fire truck bears mute testimony to the tragedy that was Tamahere. Photo: Phillippa Stevenson.

HAZMAT vehicles prove their worth

The NZFS' new hazmat/ command vehicles' capability reflects a greater investment in detection, identification and monitoring capability. They have proved their worth during the Christchurch earthquakes, the Pike River mine disaster where normal communications were difficult, and at the 'Rena' grounding off Tauranga.

The trucks carry, in addition to a wide range of communications equipment, (satellite telephones, Telecom and Vodafone network telephones, fax, internet access, wide-screen television and video monitors, remote video camera and radio telephone network patching capability) electronic incident management software, a decontamination corridor with warm water shower facilities and full containment capability a simple water shower and photo ionisation detectors and limited-use splash suits.

Also now in the firefighters' arsenal are 215 multi-gas detectors carried on selected pumping appliances and disposable splash suits carried on all pumping appliances. All staff are trained in the use of emergency decontamination procedures that can be applied should they be needed before the other equipment is on scene.

Ring 111

The HAZCHAT files!

The NZIHSM has an online forum available to HSNO practitioners where issues can be raised and discussed with other HSNO professionals.

The address for this 'blog' is http://finance.groups.yahoo.com/group/hazchat/ and you are welcome to correspond by sending a request to Linda through: office@nzihsm.org.nz.

Past topics include:
2008: LPG in holiday parks
2010: Should class 6,8,9 be included in Hazardous substance Location certificates?
2011: What is adequate ventilation?

Progress has been made on some of these issues while others are still progressing!

If you want to post your comments, you can ask us via email for a blog invitation at office@nzihsm.org.nz or send it to http://finance.groups.yahoo.com/group/hazchat/

NZ's first dangerous goods tunnel

The new Victoria Park Tunnel in Auckland is New Zealand's first certified dangerous goods tunnel. It begins a new era of sophistication for the fire-safety industry in New Zealand.

Penrose-based CSD Sealing Systems NZ worked with the VPT consortium building the 450-metre tunnel after qualifying from a global sourcing mission by international consulting engineer Parsons Brinckerhoff to find the right fire-sealing products to meet the onerous fire-safety standards.

Frank Wiseman, director of CSD Sealing Systems in NZ and Beele Australasia, said the tunnel is designed with an escape corridor along one side. "It is crucial the fire seals protecting this corridor function correctly to ensure that motorists caught up in any conflagration inside the tunnel can escape the flames and toxic smoke by using the protected escape route.

The tunnel is a cut-and-cover design – not drilled complicating matters further as a flexible jointing system is required to deal with continuous expansion and contraction as well as movement from varying load factors to ensure the structural integrity of the tunnel as part of a state highway that must remain open at all times.

The new retardant material sandwiched between ceiling and wall in the Victoria Park tunnel. Photo: CSD.

This has been achieved using concrete panels that line both sides of the structure and form the escape route along one side. In addition to the precise joint seals between each panel, there were also hundreds of service penetrations through the walls to duct cabling, pipes, electric lighting, CCTV, alarm cabling, sensors, and fire sprinklers that had to be sealed to meet the stringent fire-safety ratings.

Beele Engineering performed extensive additional testing of the system for the consortium, specific to the tunnel's fire design and construction, and Forman Group worked closely with CSD Sealing Systems during the construction process, co-ordinating logistics and installation of the systems.

"In the event of a fire in the tunnel, our fire stop sealants must be able to stop

the progress of the flames through vents, walls and cabling ducts," said Frank Wiseman.

"The special fire-rated systems not only ensure the fire integrity of the flexible joints between those panels, but also expand to replace any voids created from piping or cabling that is destroyed in the fire, thereby maintaining a barrier seal against gas, smoke, water and fire."

Photo: Auckland Motorways.

Suppliers' certification responsibilities now sensible

The New Zealand Fire Service supported the LPG self- certification as being a sensible approach, provided there are appropriate penalties where failures of the process are discovered, according to NZFS Director of Operations and Training, Paul McGill.

"We acknowlege self-certification does carry some risk, but in this case we believe the LPG industry has the ability and willingness to make it work.

"We have also done some work with the EPA on ways to use test certifiers' information gathered in the test certification process. This information can be very helpful to assist in pre-incident planning. Unfortunately, the data collected was of such variable quality that we were unable to make any use of it without considerable reworking. So that project is on hold.

However, he encouraged test certifiers to be ever vigilant and communicate with the NZFS on anything they feel the service needs to know about inappropriate signage or new or expanded HSNO facilities.

"One area we have promoted in conjunction the EPA, has been the area of emergency response plans. We are not the agency responsible for these but we are often cited in the plans as the organisation that will respond and make things right. While we will respond, we are not the experts in the processes, or use of the hazardous materials being used.

"We need to rely on business owners to have in place the things they are doing to mitigate any emergency. We can work with that, within our capability and resources, to control and resolve and emergency." he said.

Earth and energy – a human solution?

Humans have progressed at a wonderful and unprecedented rate in recent times and yet on travels around East Cape recently there was much ado about offshore drilling and service stations were few and far between. What is this all about?

Over the past 200 years societies have moved from a rural lifestyle to city-based living, food now 'grows' in supermarkets, accommodation is available and the world can be circumvented in under a day. Great distances can be travelled quickly and the advent of political democracy and pharmaceuticals have even cured disease.

The advance could be due to a number of factors such as people's newfound ability to work together, but arguably the main reason has been mankind's mastery over, and availability of, energy. From that energy, the largest contributor has been gas and oil.

We are truly living in a golden age and even simple folk live better than kings of old.

However, like all good things there is a risk associated with the widespread use of oil. Firstly it is a limited and finite resource, and secondly, overuse of the hydrocarbon resource can potentially adversely effect the climate of our planet to a position of adversity for humans.

Peak oil

The wide use of fossil fuels has been one of the most important stimuli of economic growth and prosperity allowing humans to consume energy at a greater rate than it is being replaced. Some believe that when oil production decreases, human culture, and modern technological society will be forced to change drastically.

The impact of peak oil will depend heavily on the rate of decline and the development and adoption of effective alternatives. If alternatives are not forthcoming, the products produced with oil (including fertilisers, detergents, solvents, adhesives, and most plastics) would become scarce and expensive.

Peak oil is the point in time when the maximum rate of global petroleum extraction is reached, after which the rate of production enters terminal decline.

The International Energy Agency says production of conventional crude oil peaked in 2006. Reserves in effect peaked in 1980, when production first surpassed new discoveries. Creative methods of recalculating reserves have made this difficult to establish exactly as while known land reserves

have probably peaked there are still strong probabilities of reserves in difficult to reach places such as deep sea drilling.

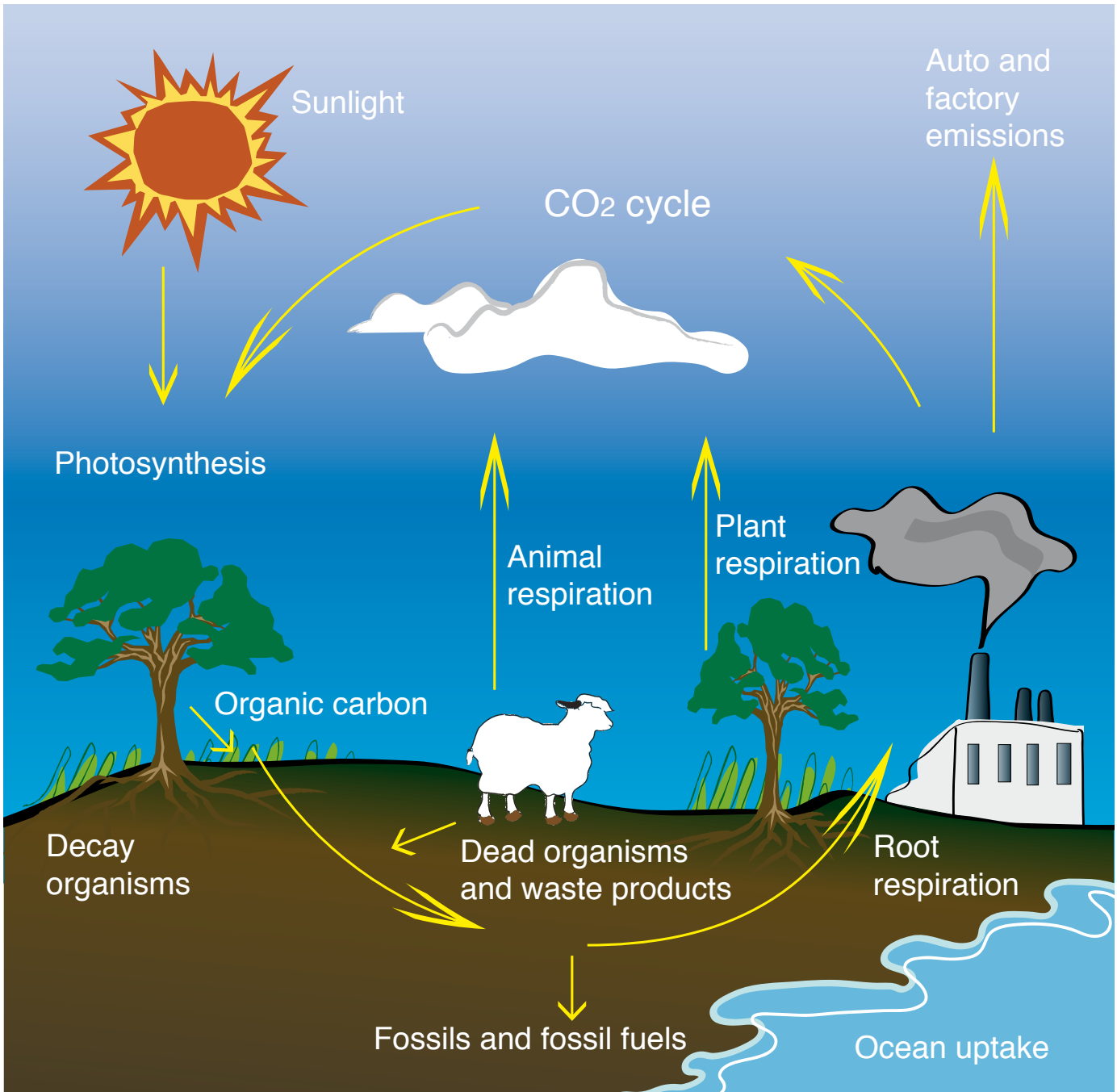
Even so, we have used this non-replaceable resource at an unprecedented rate of under one hundred years. This is very quick indeed as if the history of our 4.5 billion year old planet could be reduced to one 24 hour day, the history of modern humans and oil consumption has progressed in under one second – an unsustainable rate of use.
Energy demand is distributed amongst four broad sectors: transportation, residential, commercial, and industrial. In terms of oil use, transportation is the largest sector with the main consumer being vehicles powered by internal combustion engines.

Transportation is therefore of particular interest to those seeking to mitigate the effects of peak oil.

Another significant factor on petroleum demand has been human population growth. World population has grown faster than oil production. Because of this, oil production per capita peaked in 1979. The increasing investment in harder-to-reach oil is a sign of oil companies' belief in the end of easy oil.

Agricultural effects, population limits

Since supplies of oil and gas are essential to modern agriculture techniques, a fall in global oil supplies could also cause unprecedented famine in coming decades. Some even contend that due to demand outpacing supply, current population levels are unsustainable, and



that to achieve a sustainable economy the world population needs to reduce by up to 60%.

Too much of a good thing?

In addition to this, many experts are arguing that the increase in atmospheric carbon (as a direct result of burning carbon-based fuels) is leading to global warming through the greenhouse effect, and unless alternative energy sources or sustainable methods are rapidly employed, the Earth may indeed become unsuitable for large scale human occupation.

We could in effect cook the planet for our kids!

Not sustainable

While most humans have enjoyed the food, housing, political, travel and leisure time benefits achieved from simple energy availability, this is not likely to be sustainable for future generations unless changes can be made. What are these changes and have we a simple solution? Unfortunately there is not likely to be one simple solution, but a range of solutions are likely to be required with some examples as follows.

(i) Clean up carbon emissions from the use of non-renewable carbon fuels and reduce the effects from global warming

(ii) Increase the efficiency of fuel users with respect to fuel use per passenger and freight kilometers. From a study by Canterbury Engineering School in 1984 it would appear that railways are the most fuel efficient for long-haul land based transportation. The use of energy preservation technologies such as insulation and energy efficient motors such as heat-pump technology could make our energy last further.

(iii) Find alternate sources of sustainable, non polluting energy such as wind, hydro-electric, geothermal and of course solar technologies. Further research the development of safe and controllable mass to energy based technologies to take advantage of Einstein's E = mc2.

(iv) For those of us in the HSNO industry, practice on the safe use of chemicals could also be augmented with practice on the efficient use to make our limited resources last longer.

Overall there is not likely to be one simple solution but a mixture of solutions, with perhaps the most important factor being human-kind to think, work together and use science to understand the processes and work with our planet to achieve a sustainable future for us all. The history of the human race may depend upon it!

– **John Hickey** 0800 854444

An approved handler: for what ?

by Peter Dawson

The HSNO (Personnel Qualifications) Regulations 2001 state that before being appointed as an Approved Handler, a person must know and be able to describe "the adverse effects of the substances for which he or she is to be certificated for."

This implies that the test certifier who issues the certificate must state with a reasonable degree of certainty what substances it is being issued for. The regulations are silent on how this must be done except to state that it can only be in respect of particular phases in the lifecycles of a hazardous substance, or combination of hazardous substances, or hazardous substances with one or more hazard classifications "as specified in the certificate".

At the time the regulations were written it seemed totally reasonable that a candidate could obtain a certificate for a specific substance, or set of substances, that would be listed on a certificate. A site requiring an approved handler for a long list of substances might have these listed on the back.

So as to be not too restrictive on the approved handler, the EPA and the Department of Labour requested that substance descriptions be made with some latitude. And there is provision to put limitations on the categories of substances the handler is approved for.

Onus on certifiers

While this should, at one and the same time, allow a test certifier to define the substances without being too restrictive, the flexibility built into this puts an onus on test certifiers to provide a certificate that not only adequately describes the substances, but protects them from any future action should the approved handler suffer a serious accident.

The substance descriptions must be sufficiently precise that the test certifier can be assured that the candidate knows the adverse effects of them, the controls that are imposed under the Act and which regulations apply in respect of those substances.

As a test certifier and long-in-the-tooth chemist who has issued several thousand certificates for dangerous goods, and more recently pesticides, I reflect on how much the substance descriptions on the certificates can become as much an art as a science.

This is more especially the case today now that trade-name products and mixtures can come under the group standards descriptions. This is evidenced in the variability in the certificate formats and descriptions I see from a range of test certifiers as they re-appear for renewals. Admittedly these are for certificates issued in the early days 5-6 years ago.

For instance one is for a certificate for an approved handler for a supplier of industrial products "for Class 3.1A, B, C flammable liquids, class 6 toxic substances and class 8 corrosives for storage, use in manufacture, use" (and disposal ?).

The certificate does put a limitation on only those substances as handled by the company. In fairness to the test certifier, he has tried to build in flexibility as well as some specificity. This limitation also implies that he has been assured that the candidate knows the adverse effects of the 'substances' and the controls that are put on them.

So far so good – but what would be the hypothetical

legal scenario, that has yet to be played out in practice, if this approved handler was subsequently asked by his company (as has happened in another instance I am aware of) to additionally operate a small production line preparing a new product for sale consisting of bottles of dilute 5% formaldehyde solution as a disinfectant.

The company would need an approved handler in order to be able to purchase concentrated formaldehyde (class 6.7A) for dilution. The current approved handler is approved for "class 6 toxic substances" without specifying which ones. Two years later the approved handler presents to his doctor with a lung lesion that proves to be cancerous. Diagnosis shows it to be of a type consistent with a chemical carcinogen.

In this hypothetical situation, would the Department of Labour lawyers, ACC lawyers or the approved handler's lawyers try to make the test certifier a scapegoat by claiming lack of due care in not ensuring that the approved handler was aware of the adverse effects specifically of a class 6.7A substance ? They could certainly quote the Personnel Qualifications Regulations verbatim to make their point to the judge.

Having been called as an expert witness in court cases in a past life as a pesticide residue analyst, I am only too aware of the ruthlessness a defence barrister will stoop to, to win a case for the plaintiff.

Weekly, if not daily, while preparing approved handler certificates I apply the "what if !" rule for the description of substances on the certificate before signing them off and I hope that as time has gone on, other older and not old test certifiers do as well.

In fact, I would go as far as suggesting that for the legal protection of all approved handler test certifiers, there be at least a guideline, if not a code of practice to provide guidance on best practice ways to describe combinations of substances on an approved handler certificate.

Peter Dawson can be contacted at Technical Compliance Consultants Ltd.
www. techcomp.co.nz

Fireworks inspection challenged

The EPA has mooted that test certifiers must inspect all sites for fireworks before issuing a test certificate.

Fireworks expert Anthony Lealand has challenged this recommendation and has put up a website to show just some of the issues this raises. http://www.pyronz.org

He says it is the approved handler in charge and responsible for all the things the test certifier cannot address – and examples are: security (boats, people, planes), CAA requirements, animals that appear in paddocks nearby, wind, DGs appearing on the site such as hot air balloons, and fire safety.

"Yes, there are occasions when a test certifier may need to visit such as buildings with major adjacent risks, but what good is it viewing a patch of water or a farm paddock to issue a certificate? It is also more likely that fire safety may need to visit the site, not the test certifier, when there are building issues."

Isolated sites in the country may require days of travel, accommodation and a 4WD for the test certifiers. "For a show in a paddock that may be worth $3000 using a local approved handler! Test certifiers may rub their hands at the fee, but the reality is that no one is going to pay $2500 for a test certificate for the small country show."

He suggest a path that sites that have not been used before probably need a visit by the approved handler to photograph them, measure them and check the nearby residents and paddocks. "This is prudent business practice for the company mounting the show anyway,"

Uncle Archie

Hello HS practitioners!

EPA to offer driving lessons?

The Environmental Protection Agency has rapidly assumed the role of the former ERMA but has other early tasks to contend with such as a container ship carrying hazardous substances being driven onto rocks off Tauranga.

A great clean-up effort to date but a perhaps a pity that 'driving lessons' do not seem to be a prerequisite for some local ships and their Italian colleagues!

Pike River Commission of Enquiry

The third stage of the Pike River Mine accident, Commission of Enquiry has been completed with media reports highlighting potentially unsafe practices with limited safety systems as the mine moved fast to try unproven technology and achieve profitability. The Royal Commission is to report its findings by March 2012.

Tamahere

The enquiry into the fatal gas explosion at Tamahere was carried out during Sept 2011. It appears that a number of minor incidents, leaks and resupply issues over previous months could have provided a clue of the future catastrophe if they were highlighted to the owners and experts as they occurred.

Self-certification vs supplier responsibility!

Dear concerned, Archie has been pressurised to remit his stance against 'self-certification' of Hazardous substance sites by some suppliers and owners.

Archie still strongly believes that independent review is an important part of democracy, encouraging transparent operations and minimising potential conflicts of interest for the public!

However, Archie is prepared to concede that suppliers also being responsible for the safe delivery and operation of their products is a very good idea indeed!

EPA Bank

The EPA has moved from BP House to new premises in the old ANZ headquarters on Featherston St, Wellington. Is this recognition that protection of the environment has moved from 'oil' to 'banking' on our future?

If you want to send your comment, you can send it to archie@NZIHSM.org.nz.

The ideas expressed in this column are not necessarily the views of the NZIHSM or Flashpoint and in some cases the NZIHSM frankly does not approve!

The INCIDENT files!

Rena: An oil tank has washed up on our shores!

Pike River: The investigation continues.

Canterbury Tales: The earthquake commission is examining cause and effect while many Cantabrians wait on the insurance industry. Public comments in the wake of incidents would indicate that a high expectation is placed on all in the compliance, inspection and enforcement industries.

Tamahere and other major blazes: See articles from NZ Fire Service.

Hazardous Substance Incidents: Over 100 HS incidents have been reported to EPA between July and November 2011 and over 600 for the year July 2010 to 2011.

New organism incidents: 19 incidents were reported to EPA between July 10 to June 2011, most with no environmental effect but four having minor effect on human health.

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