

FLASHPOINT



Christchurch rocks again



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.

ERMANZ

www.ermanz.govt.nz

Extensive information on working with hazardous substances.

Ministry for the Environment

www.mfe.govt.nz

The Ministry administer the HSNO Act, and provides policy, publications, technical reports and consultation documents

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.

Earthquakes, explosions and extreme events – again!

We still seem to be bit players in a dramatic adaptation of *The Tempest*. Canterbury has had another major earthquake with this one set to further test the renowned resilience of the Cantabrian spirit. Japan too has felt the full force of nature.

When in Christchurch over January I was amazed that in spite of a large magnitude earthquake in September, the buildings and people of Canterbury were up and running almost without interruption.

Back in Christchurch a few months later, much of the city structure is now scarred from the effects of a smaller, but closer and more dramatic earthquake. The central city is under armed guard and partly demolished buildings and streets are obvious throughout the central and eastern suburbs.

My old dairy is now a thing of the past and the local Spreydon shops are closed off to public access with strange sandy growths appearing along the roads. One could understand if all this had repressed and distressed the people of Canterbury.

So it is heartening to see the positive spirit of almost everyone I met. In spite of all the difficulties that nature has delivered, almost everyone is getting on with life, the student and farmy armies were shovelling silt and within days much of the city has regained its former spirit.

We understand that to correct all issues will take considerable effort, but most people that I meet are positive, stoic and resilient – a great reminder of the strength of the human spirit.

I, for one, am proud of Canterbury and the ongoing strength of those who live there! Our thoughts and best wishes are with you all.

John Hickey
Institute president



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Cover photo:

Various scenes of Christchurch after February earthquake.

Flashpoint

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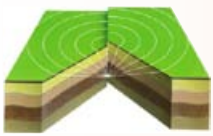
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Battered, but standing...

Fireworks Professionals Ltd is looking a bit like a battle casualty after the February quake in Christchurch, but is still standing and functioning, thanks to some ingenuity and fast work by Anthony Lealand, his staff and family.

“The day of the quake started with us being very busy,” said Anthony, “getting out to see a site for some special effects. I was in my private room changing my boots, when all the glassware cascaded round my bare feet on the floor. I had to hold on to avoid being thrown over into the broken glass.”

Everyone ran outside and

started taking stock of what had happened. “The building looked very straight, until we looked along one side and could see two loose wall panels (they are 6 m long and 5 m high, 150 mm thick and weigh about 10 tonnes).

“That started a mad dash to somehow try and restrain them. The neighbour wouldn't let us through his place as he was doing some work on the driveway and there was reinforcing steel in the way. Had I thought about it, I could have smashed the forklift through a back fence. But, anyway, there I was on the roof putting in long-threaded rod and nuts along with very big washers to try and hold

the panels together.

“Diccon was inside as we had pushed a loop of a strop through the hole for me to drop a pipe through from the roof. He was going to tie it back to the forklift.

“Another quake hit and the panel went over, taking the workshop three-phase switchboard with it.”

Anthony was yelling to find out where Diccon was. “He'd run to the front of the building to come up the ladder to find where I was. So we were both in a panic looking for each other from the top and bottom of the ladder,” he said.

However, now they could drive the forklift through into the neighbours! Anthony then put the forklift up against the wall and that was the end of day one. So he thought!

“We had decided that we could drill holes through the panels and put steel plates and very long bolts in. Tony was going to pick those up in the morning if the shop was open.”

That night it poured with rain, so Anthony had to set to work by himself to deal with the water coming inside in torrents. “The internal gutter was torn to pieces, so water came cascading down, so much so it filled a 200 litre barrel in 10 minutes.”

He built a dam of sand and plastic to keep the water out, and stayed overnight as security. “We still have the water as it is very useful to drink, being pure. All the water here needs boiling. That is, if you can get any water out of the tap.”

Luckily Anthony managed to get the threaded rod. “We have



The fallen panel (which weighs about 10 tonnes) and the remains of the switchboard. What is left of the gutter can be seen in the foreground.



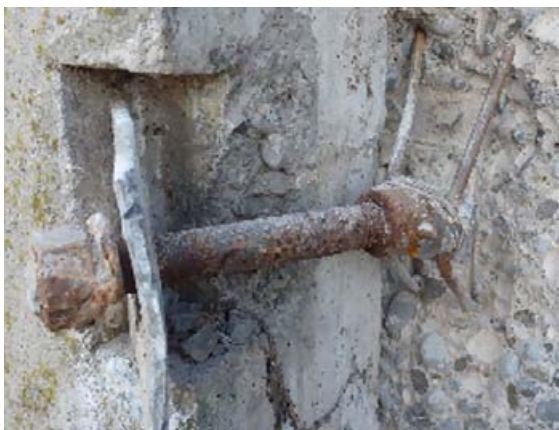
The attempt on the day of the earthquake to stabilise the remaining panels consisted of several of these locking the panels together, as not all the panels had shown signs of shifting.

a very powerful concrete drill and generator so we could drill the holes to hold the panels in place,” said Anthony.

“My son Nick and his girlfriend came along with a couple of friends and started tidying up as quite a lot of stuff had been thrown off the shelves.

“We had been working steadily on fixing all the panels in place, and then found that it was possible that the front and rear could fall off the building. So we bought more steel and welded it into brackets. We

The meagre system for holding the panels into place. Only two of these bolts hold each panel as each of the four bolts is shared amongst two panels.



were extremely lucky to have the drill we got for working with explosive, steel plates left over from some fireworks stands, and access to the shop to get the parts.

“Best of all I managed to get an engineer to visit and approve what we were doing so the building will not be demolished.”

Many people are unable to go into their premises to get any of their gear out and some building have been pulled down on top of all the assets, so their businesses may be lost completely.

No phone, no water ...

“Through this we had no water, no electricity, no phone, no Internet and very patchy cell phone coverage,” said Anthony.

“We got all our services back over the weekend five days later, but the water supply kept coming and going.”

A new switchboard is being prepared and Greg, their electrician, even though he is minus power, water and telephone, has agreed to wire it in.

“Everyone at work has had some things go wrong from Heather having her house completely demolished, incredibly difficult access through the roads which have been very badly smashed, friends and relatives without houses or jobs.”

The centre city of about 4 sq km was cordoned off for safety and to allow rescue work to go unhindered. It is being said it will take over a year to demolish all

buildings that are beyond repair.

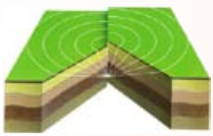
“When we went to our magazines to check out fireworks, they were okay but many had been thrown off the shelves. The vertical acceleration was so strong it had thrown shelf brackets off the steel shelf frames, dropping the whole shelves off.”

Anthony says people are quite slow and not thinking very well, often starting some job in the most laborious manner possible because they are stressed and cannot think of an easy way to do it.

“But everyone is working with the will to get the business going again. We are hoping to be fully functional by the 24 March when we have a show in Queenstown,” he said.

The forklift was moved along the wall, holding each panel as Fireworks Professionals’ staff drilled holes and put in the tie bolts.





February quake

Shaken, not flared

A big earthquake near a fireworks company would make many people shudder at the possible consequences. But there was no big bang or free display over Fireworks Professionals' Woolston premises.

The February quake, as opposed to the September quake, managed to toss a lot of pallets of Fireworks Professionals' equipment sideways, so they then fell down in between the rails of the pallet shelving. A couple of items fell off the shelves, but

the majority of the gear stayed in place.

“It certainly tested the fastenings of the pallet frames. A couple have been torn out of the ground, but without the frames tipping over.

“At our magazine, shelves were thrown upwards and became detached, and the rails similarly jumped upwards approximately 30mm to fall off the support pillars.”

Fireworks are designed for pretty rugged handling, said Anthony, so while there were a few bent corners on the boxes, there was no fireworks' damage of any significance. “In particular, starshells are designed for accelerations of up to 1000 G so falling on the wooden floor was

neither here nor there.

“We have very rapidly devised a technique involving cable ties, which will hold the shelf on the rails and the rails on the pillars – in line with a phrase in common use down here:

a cheap, cheerful, economical and thoroughly satisfactory solution!

“We don't imagine this will be the last of the earthquakes.”



Cable ties hold shelves and shelf rails in place.

Liquefaction entrenched in lexicon

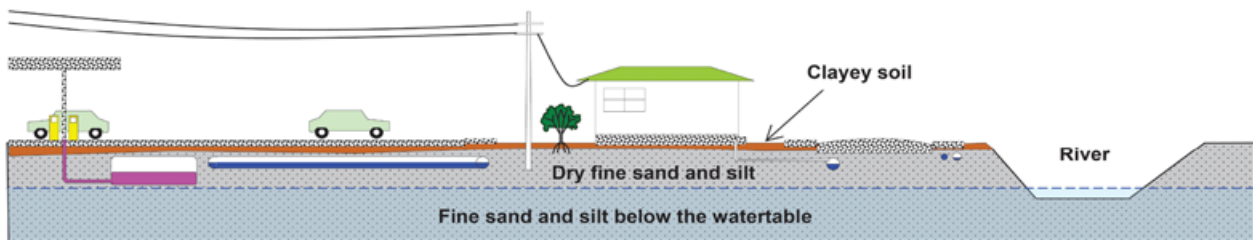
Liquefaction, the earth turning to a liquid, was until September, a word seldom used by the general population. Now it is immersed in the lexicon. It

works by shaking fine material up through cracks and turning it into ooze. It can leave sink holes behind and produce silt volcanoes.

Liquefaction and its Effects

Before the Earthquake

Areas of flat, low lying land with groundwater only a few metres below the surface, can support buildings and roads, buried pipes, cables and tanks under normal conditions.



During and after the Earthquake

During the earthquake fine sand, silt and water moves up under pressure through cracks and other weak areas to erupt onto the ground surface. Near rivers the pressure is relieved to the side as the ground moves sideways into the river channels.

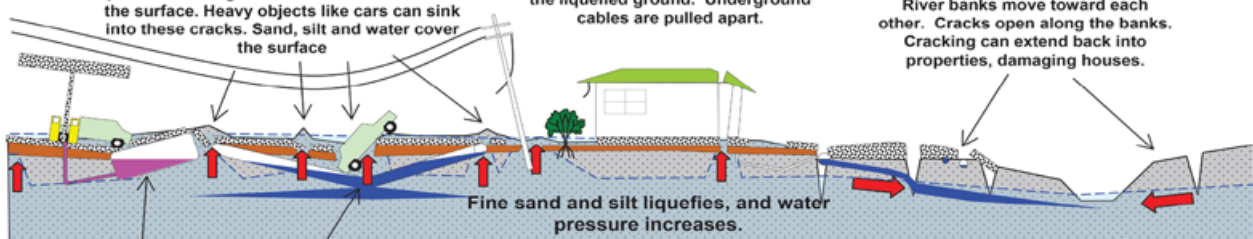
Sand Boils (Sand Volcanoes)

Sand, silt and water erupts upward under pressure through cracks and flows out onto the surface. Heavy objects like cars can sink into these cracks. Sand, silt and water cover the surface

Power poles are pulled over by their wires as they can't be supported in the liquefied ground. Underground cables are pulled apart.

Lateral Spreading

River banks move toward each other. Cracks open along the banks. Cracking can extend back into properties, damaging houses.



Tanks, pipes and manholes float up in the liquefied ground and break through the surface. Pipes break, water and sewage leaks into the ground.

Nature not nature:

Should humans manage risk?

Not Again! Mother Earth seems to be reminding us lately that rather than being masters of the planet, like the dinosaurs before us, our cling to this rock can be very tenuous indeed!

Christchurch's September earthquake followed by Pike River, Queensland floods, Victoria droughts followed by floods, and just when it was settling down, a more destructive earthquake in Canterbury followed by a thousand-times bigger quake in Japan.

While all of these incidents were serious, the last New Zealand quake is a big test on the renowned resilience of the Canterbury people, sadly destroying much of the beautiful stone buildings that were such a highlight of the city. In less than a lunch-hour, nature dealt to decades of man-made structures and beauty with a force hard to comprehend. Japan had a triple risk, a quake followed by

tsunami and a possible nuclear disaster as well.

It makes you wonder why we try and manage nature, why we reinforce our structures, secure our gas cylinders and try to compete with nature. Can we build buildings strong enough to resist the largest quakes? Can we stop deaths on the roads, can we stop gas explosions taking lives?

The truth in ALL cases is probably not. There will always be the unexpected or dramatic events that, whether we like it or not, will test the most rigorously designed systems.

In many ways we seem to be compulsive control freaks. Perhaps as 'thinking beings' we like to feel that we are in some way in control of our environment. Is this not what our science is all about – to mould and develop the environment to make life safer for us all? Or is the goal to



protect us against nature like the goal of our HSNO Act like many others of our laws – “To protect people, communities and the environment against the adverse effects of hazardous substances”.

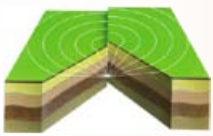
Perhaps we forget that our 'modern' age and science is less than 8000-years-old, which while in human lifespans is a long time, in geological or nature's terms is very short indeed when compared to the estimated 4.5 billion years of the planet.

Perhaps if nature can make such an un-controllable difference without any notice, should we not, like some of our forebears, just try and adapt to our environment and 'make hay while the sun shines'? Why restrict ourselves in the unproven theories of environmental science and indeed, limit our short-term gains, for possible but uncertain consequences to future generations?

In practice, humans may be the first of the earthly inhabitants to have tried to understand the

continued page 6





science of the environment and in part can understand, or at least theorise on the cause and process of adverse events. This scientific understanding of the cause of adverse events arguably delivers a responsibility to control the process to limit the occurrence of adverse events where possible or at least minimise the effect on the entire planet.

We must at least TRY to care for our fellow inhabitants and environment and if successful, then perhaps we humans could indeed cling to our rock for longer than the dinosaurs.

– John Hickey, president NZIHSM.



Buildings get twice the shake

Some buildings in greater Christchurch may have experienced shaking more than two times more intense than a new building would be currently designed for, but perhaps for a lesser duration than envisaged by the loadings code (NZS 1170.5), according to IPENZ.

Buildings are not designed to be earthquake-proof.

Two design levels are considered. A building of ordinary importance is designed for a level of shaking that has a 10 % probability of being exceeded in its design life of 50 years. The design standards are formulated to ensure that life safety is achieved during that shaking, but the building might be an economic write-off because of the damage. It must not collapse at this level.

The designer is also required to check that the building does not have damage at a level about 1/6th of this design level. This serviceability level is set to correspond with shaking that has a 10% probability of being exceeded in one year.

To put it another way, says IPENZ, the life safety design level can be expected to be exceeded on average (over a very long period of time) once every 500 years, and the serviceability level once every 20 years. Note

that no mention has been made of Richter magnitude, as the building responds the same way to shaking that comes from a small close earthquake or a large distant one.

In the Christchurch CBD, the buildings designed to the current standards have, with few exceptions, performed well and as intended, with little damage, the institute notes.

Notable exceptions are the failures of stairs in the Forsyth Barr building, and the tilting of a 10-storey building on Oxford Terrace near the river. The two buildings that catastrophically collapsed (the Pyne Gould Corporation and CTV buildings), while described by the press as modern, are understood to have been constructed in about 1963 and 1986 respectively. Many buildings designed before the early 1980s may have experienced earthquake loads significantly above that for which they were designed.

Most of the infrastructure damage is directly attributable to liquefaction. The likelihood of liquefaction in the wider Christchurch area in this level of earthquake has been known for more than 15 years, but the scale of the damage experienced may be the greatest ever recorded anywhere in a modern city, said IPENZ.

Chemical cocktails and no-go petrol stations

by Lyn Osmers

The 2011 Christchurch has no incident register started with a bang (and a crash and a huge shake). The February 22 earthquake emptied shelves of chemicals, ruptured pipes, destroyed LPG facilities and emptied shelves of chemicals, making for some potentially interesting and dangerous cocktails.

A small fire broke out in a group of lock-up garages in Woolston not long after earthquake. Another tenant noticed the smoke coming out from under the door and took to the garage with a forklift, first through the roof unsuccessfully and then turned on the door. The fire was at the rear of the garage and fortunately the neighbour was able to extinguish the fire with hand-held fire extinguishers.

Unwittingly he averted a situation that potentially could have turned out to be much, much worse. The garage was 'chocka block' full of old

chemicals – the entire collection from the May and Baker chemical catalogue. The fire had started alongside a chest full of sodium and there was also picric acid stored in the same area. There was no segregation, no signage, no approved handler. The initial fire was caused by incompatible chemicals combining (goodness knows which chemicals – we will never know).

The occupier had been storing in this garage for 25 years. He was a retired Dr of Pharmacy who was still tinkering at Canterbury University. As chemical companies went out of business, the pharmacist brought up their stocks.

Our investigation found he also rented a second garage. When this was opened, it too was chock full of chemicals. The garages have been cleared out. I seized the product under the Civil Defence Act. They have been segregated into larger drums and stored in brand-new

chemical depots the council had bought, and never got the chance to use themselves, pending disposal.

The second call after the earthquake was

from oil company representatives seeking consent to remove and replace damaged underground petroleum fuel tanks. At this stage the only means of communication was via texting. Thankfully I had a car charger to keep the cell phone going until I could get into civil defence HQ to recharge. Contractors, well-heeled from the previous quake, were out checking sites and I procured a list of sites that had visible damage.

A number of private sites were also affected and so I assisted those people getting in touch with appropriate industry experts.

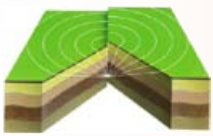
New problems

New problems encountered this time round were badly-affected service stations inside the red no-go zone and emergency personnel



The pharmacist's interesting collection of old chemicals was strewn about.





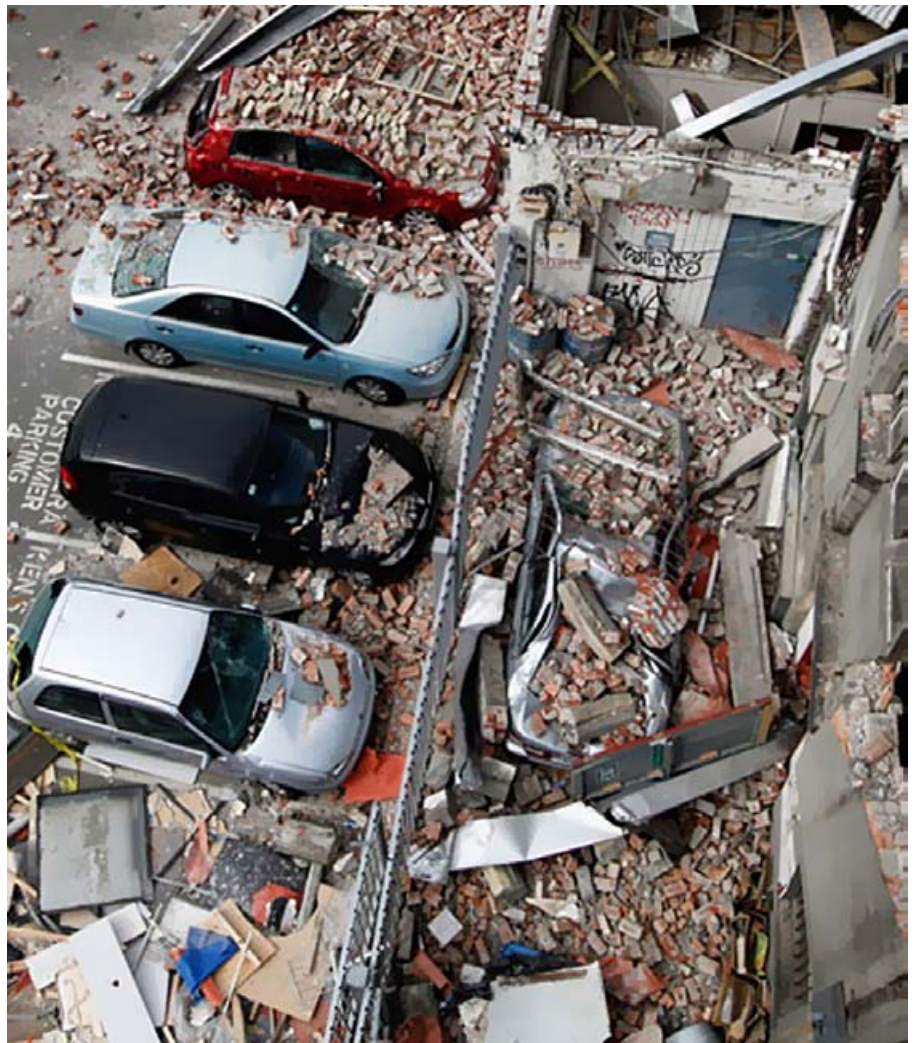
February quake

camping out on those forecourts with their camp cookers.

Other tasks undertaken in the days immediately after the earthquake included obtaining a list of red-stickered buildings and getting that out to the LPG retic contractors and the gas suppliers so buildings with LPG could be identified.

Requests were made to ERMA and DoL for an extension of time for the March deadline for gas supply companies to have copies of the location test certs.

I was able to momentarily get into our damaged building and grabbed my PC which had Chemsafe loaded and also Web Map, so I was able to print off site photos of damaged buildings, mark up the locations of substantial stocks of hazardous substances and pass this on to USAR. (Don't know if this was helpful. No doubt I will find out at the debrief.) I also provided copies of the LPG retic map that showed which lines were live and ensured the Fire Service command vehicles had copies.



And to prove normal life goes on amongst the chaos, I also had a number of urgent location test certificates that needed issuing.

Lyn is Christchurch City Council's test certifier.

Handy things to have in a civil defence emergency:

- definitely a cell phone, but also a car charger.
- data stick with relevant application forms, seizure notice notices etc.
- a full can of petrol for the lawnmower that you can use for the car.

Damaged petrol stations have been a feature of both big quakes.



Liquefaction all pervading

Lyn Osmer's hasn't escaped the all pervading liquefaction.

She said the first three weeks after the quake have been a bit of a blur: working in the mornings and digging mud in the afternoons with students and neighbours.

"The liquefaction around the house was half a metre deep and stunk of sewerage. When it dried it was a very fine dust and just went everywhere. With no power you couldn't clean up.

"We had no water, power or sewerage for nearly three weeks. Still have no sewerage. Most of my neighbours have abandoned ship. Our house, along with at least three others next door, will be demolished. At least we can still live in ours until that happens – the neighbours weren't so lucky."

The concrete floor slab of her home is in about eight pieces.

Lyn's office is out of bounds, so she is working out of the

Christchurch City Council's Fendalton service centre.

"I had just completed a service station site visit in Waltham and was sitting in my car talking on the phone, watching the canopy swinging back and forth until the caller decided it wasn't a little quake and was getting out of the building. Almost instantly the water mains burst along the road and a number of premises were flooded.

"I headed into the Civil Defence Headquarters at the Art Gallery. Everyone was trying to get out of the central city. I had to park the car and walk.

"Telephones were down so you could only communicate with texts. First texts were from my three kids to say they were all OK. The first work call was regarding the incident at Tanya St (see page 7)."

It took Lyn two hours and a quarter tank of petrol to get home after being dismissed from CD HQ on the day of the quake. Normally it would take 20 minutes. "Again, in the end, I parked the car and walked the last kilometre as the roads were gridlocked."



EPA starts work in July

The new Environmental Protection Authority is scheduled to be ready for business on 1 July, 2011.

An establishment board has been formed to assist with the transition from ERMA to the new organisation that will strengthen and improve New Zealand's environmental management. It will be an independent Crown agent at arms-length from the Government with its own board.

An Establishment Board will start recruiting for the position of CEO of the EPA, and draw up a list of possible appointees to the Maori Advisory Committee and Hazardous Substances and New Organisms Committee, as well as their terms of reference.

The Establishment Board is: former Wellington Mayor Kerry Prendergast (chair), Richard Woods (current Chair of ERMA), Dr Keith Turner (former CEO of

of Meridian Energy); and Anake Goodall, retiring CEO of Te Runanga o Ngai Tahu.

The EPA will bring together some aligned functions and powers from the Ministry for the Environment, Ministry of Economic Development and ERMA, and be responsible for national-level consenting and regulatory functions under a number of statutes.

What is adequate ventilation?

Adequate ventilation for flammable substances should be of interest to us all and sometimes seems to be one of those 'grey' areas.

From first principles, "Adequate ventilation" is when a flammable vapour in an area can be captured and removed from an area prior to it reaching the %LEL (lower explosive limit) – an issue of capture rates.

An electrical inspector asked us what was adequate ventilation, especially for indoors? He had two sets of engineer's calculations. One was in favour of the AS/NZS60079.10.1.2009 criteria of an open-air situation or where there are air velocities of not less than 0.5m/s and/or calculating the theoretical volumes. The 0.5m/s is very high but does line up with the typical capture velocity for evaporation in still air from the U.S. Committee of Industrial Ventilation that carried out much of the early work in this area.

Unfortunately this 0.5m/s across a whole area is often very difficult to achieve while maintaining a workable area due to the inverse square reduction of suction vs distance from a duct.

It may take a Boeing 737 parked behind the building to achieve adequate ventilation across a moderately-sized warehouse. This, however, can be employed on a localised extraction system only, but is very difficult and windy for a pleasant working environment.

Alternative criteria

An alternate criteria is laid out in AS1940, the Australian standard (for handling Dangerous Goods Section 4.4.4 Mechanical ventilation) that only requires a "system capable of exhausting 0.3m³/m² of floor area per minute or 5m³/min and the air velocity at the air entry register shall exceed 300m/min (5m/s)".

This, of course, ignores the distance of the vapour away from the extraction vent but gives a

much smaller Hazone which is, of course, favoured by many sites as a more practical solution.

It appears that the AS1940 ventilation rate may also be acceptable under the 'current code' 60079.10.1.2009, for specific circumstances. An example for closed paint storage areas where AS/NZS 60079: Cl ZA9.2.2.1 notes that "Note 1: The above classification is based on the provision of ventilation as detailed in AS1940", and if it was good enough there for AS/NZS60079, why not elsewhere?

A very good question, two answers to the same issue! And we may even get other answers from AS4114 and AS1482 with the sites concerned seeming to favour the cheaper option, although does nature work like this with safe Hazoning?

The question still remains: what is adequate ventilation and from the above examples (wrt 60079.10.1.2009) should all or only some of the above definitions should be considered acceptable?

Any clarifications on this gratefully received so that we can try and provide a consistent NZIHSM viewpoint.

John Hickey, NZIHSM

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Uncle Archie

Hello HS practitioners!

Self-certification for LPG being implemented!

Many practitioners have expressed surprise that a result of the Tamahere review was the proposed 'self certification' of LPG facilities! LPG cylinder storage may be self-certified for up to 300 kg LPG provided a proposed Code of Practice is followed, but there will be no regular independent checking of this.

The proposed code doesn't refer to adequate ventilation or independent verification, and Uncle Archie believes that this may not be a safe practice. Every facility should be checked at least once every two years to stop those incidents.

One-off inspections

I'm hearing that many test certifiers have been busy recently with their one-off inspections and these appear to have been instigated by suppliers as a direct result of discussions with ERMA. This is a positive development in as far as ensuring that all users have at least one inspection, which from a safety perspective, is far better than none.

However, other anecdotal evidence is that the inspections have found many cases of LPG stored under stairs, in access routes, adjacent to ignition sources or flammable surfaces

with little or no warning signs. This may indicate that regular and independent inspections should be instigated to ensure ongoing public safety has a higher chance than luck.

The draft self-certification Code of Practice from the LPG Association was released in November 2010 and it is understood that NZIHSM and members provided much feedback

– items such as an ensuring of adequate ventilation, removal of ignition sources, signage, separation to HILO's, etc should be included to reduce risk against ongoing safety. My contacts in NZIHSM have yet to receive a response from the LPG Association.

Pike River

We still remember the results of uncontrolled flammable gases in unfortunate events of the Pike River mine near Greymouth. We can sympathise with the families who want to 'get their boys back' and can understand this concern.

But, there is the remaining problem that this should not be attempted until the mine is completely safe for any search party.

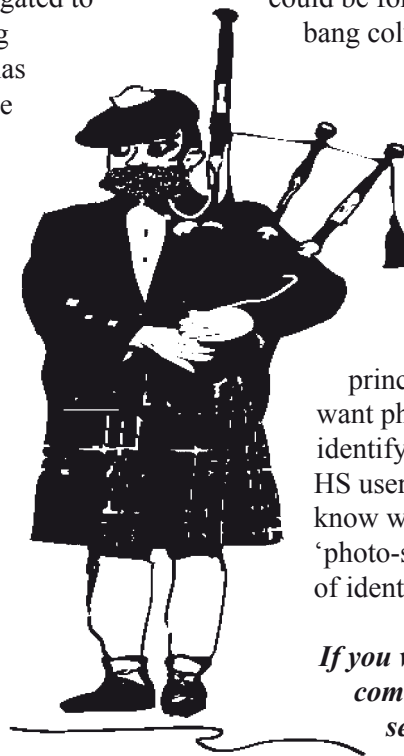
Big bang column

While I've received many tales of unsafe occurrences from members and others, it would be really useful to our members and other HSNO Practitioners if as well as words; general photos of the unsafe occurrence could be forwarded for a "Big bang column" with suitable caption regarding the learning experience for the benefit of all HS practitioners.

Please note that as these photos are for learning principles, we do not want photos, which could identify or embarrass any HS user unfairly. Let me know what needs to be 'photo-shopped' in the way of identification.

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!



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Submission on LPG draft code

In response to members requests, the following is the Institute's submission on the Draft Code of Practice (HSNOCOP50) for LPG Cylinder Storage Compliance 100 to 300kg issued to the LPG Association of New Zealand that was omitted due to space constraints in the last issue of *Flashpoint*:

The NZ Institute of Hazardous Substances Management (NZIHSM, formerly the Dangerous Goods Inspectors Institute) is the industry association specialising in the safe management of hazardous substances in the community. It is the principal professional body representing HSNO test certifiers, enforcers and hazardous industry professionals bound by a Code of Ethics.

While understanding the many positive benefits of LPG, the NZIHSM canvassed members, certifiers and

enforcement opinions, from an overall safety perspective, on the proposed draft code COP50 with the general results as follows.

Overview

NZIHSM would like to work alongside the LPG Association towards the safe operation of LPG facilities. In this respect we believe that making LPG suppliers aware and responsible for supply monitoring is a positive move, however we do not understand why when controls are being tightened, the independent checking is being removed.

The NZIHSM believe that there should always be independent inspection to minimize potential conflicts of interest on environments such as LPG installations that could easily be potentially dangerous to people and the environment.

The Tamahere coolstore case is emphasised as an example where it was found that insufficient minimum requirements (eg: Signage) led to catastrophic results. This absence may have easily been identified if independent HSNO certification had been used. This incident resulted in loss of a firefighter's life. There are a number of similar examples (see below) where the treatment of LPG containers in industry is not always code compliant (ie: safe) on initial site visits,

until reminded by certifiers or enforcers.

Non-compliance amongst smaller operations

Whilst it is likely that most of the larger LPG suppliers will have substantial checking and verification systems in place, not all of the refill and smaller operators appear to be rigorously checked for their own or customer's safe practice.

Recent examples from members include:

- (i) A Laundromat found operating as an LPG re-filling station with multiple cylinders stored inside an operating Laundromat near uninformed members of the public.
 - (ii) Many examples of >50kg LPG stored inside in inadequately ventilated areas
 - (iii) Internal Class 2.1.1A cylinders stored alongside oxygen cylinders
 - (iv) Internal Class 2.1.1A cylinders stored underneath fire egress stairs or within fire escape routes
- Whilst the NZIHSM does NOT believe that LPG Association



The secretary has a good view of petrol and lpg storage.

members have deliberately approved of these practices, the fact remains that the non-compliant sites have received their LPG supplies from somewhere.

Period of test certificate visits

NZIHSM believes that for public safety, and because of observations by members that there must always be regular and independent inspections and certification. In many cases it would not be possible for a test certifier to issue a certificate for longer than one year let alone an 'unlimited and infinite' time span.

Due to the regularity of non-compliant sites found on certification visits and indeed in between annual visits it is strongly believed that a Test certifier must visit site if not annually at least once in the period of a LPG HSNO COP50 certificate. (ie At least once every 36 months)

However, for the purposes of comment on the proposed Code of Practice COP 50, we believe that the following items should be required as a minimum requirement:

- (i) A check for "ADEQUATE VENTILATION" must always be undertaken.
- (ii) A check that there is always less than 50kg in any building or internal storage location at all times.
- (iii) A check that the site and/or location have not changed since the initial Test certifier location certificate was issued. (from experience many sites change to a non-complaint state even over one-year inspection periods).



The blast power of lpg is devastating.

- (iv) A limitation is required by test certifiers for their liability for the issuing of a certificate to be limited to a fixed and finite period (eg: One to three years).
- (v) A check of neighbouring sites (eg: HILU, Resthomes, etc) and suitable separation distances relative to the location of the LPG stores
- (vi) A check of security of the LPG facility (eg: Lockable gates around facilities near children and not just an unsecured chain)
- (vii) Adequate signage and ERP requirements and safety knowledge of LPG user.
- (viii) A presence of suitable Hazardous zone drawings to AS/NZS60079 and control zone drawings where required.
- (viii) The explosion protection requirements for any Class 2 or 3 facility.

In summary

Whilst the NZIHSM agrees with the LPG Association's effort towards improving the safety of its members' supply of LPG to all sites, we do not understand the need to remove ongoing independent checking and verification.

As a result of our members many

observations during site visits we believe that the regulators, suppliers, certifiers and users need to work together to achieve the required levels of public safety and not limit this to any one party.

The NZIHSM would warn that the LPG Association members could open themselves to perceived conflicts of interests if they have taken on all responsibilities themselves in the case of any incident.

Whilst acknowledging the many positive benefits of LPG, we are pleased that some efforts are being made towards increasing the safety of people, the communities and the environment from the adverse effects of LPG by the LPG suppliers and look forward to working alongside your members towards this goal. However we also believe that independent and ongoing inspection is a critical component in the ongoing safety of LPG and other facilities.

NZIHSM are awaiting a reply from the LPG Association regarding inclusion of the above points raised in their proposed Code of Practice.

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