FLASHPOINT

Summer 2015

Bhopal and Macondo:

Never-ending nightmares

Safety and hazard analysis inside …

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
Box 5557 Wellington 6145
Responsible Care NZ works with industry partners to implement the Hazardous Substances legislation.

Worksafe (MBIE)
www.worksafe.govt.nz
Government agency formed to povide compliance advice and enforcement of hazardous substances. Responsible for hazardous substances certiicates.

EPA
www.epa.govt.nz
The EPA administers the HSNO Act and supplies extensive information on working with hazardous substances.

Ministry for the Environment
www.mfe
The Ministry provides policy, publications, technical reports and consultation documents on HSNO legislation.

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 hazardous substances legislation.

Government legislation
www.legislation.govt.nz

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

President's column

Heath & Safety for ALL!

Since the Pike river tragedy various parties, including our members, are working on proposals towards improving the overall health and safety of the workplace within New Zealand.

Hazardous substances form a significant part of the hazards and exposures that can arise in the workplace and, indeed, it could be argued the Pike River incident was actually the explosion of a hazardous gas in a confined space without the compliance checks expected under a HSNO Act regime for a flammable substance.

While the existing HSNO Act covers all members of society, the proposed Health & Safety Reform Bill is focussing on the Workplace. While the employment sector is very important, it is also important that all of society and it's environment is kept 'healthy and safe' for ALL.

NZIHSM members will continue towards our mutual goal of "The protection of communities, people and the environment against the adverse effects of hazardous substances, while maintaining the benefits of these' and we will be covering some methods to achieve this at our forthcoming NZIHSM seminar.

We hope to see you there!

Thanks and best regards

John Hickey,
president NZIHSM

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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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What is a safety and hazard analysis?

Following Pike River the authorities decided that our Health and Safety regime needed to change, and who better to emulate than our Australian cousins?

As a result, the Australian Dangerous Goods legislation is currently being adopted as New Zealand law (although, hopefully, the good science-based aspects of the New Zealand hazardous substance legislation will be retained.) As part of this, the current proposal is to in general adopt the Australian Safety guidelines of the state of Victoria.

The proposed Health and Safety (Reform) Regulations divide the workplace into
(i) high hazard areas (where a lot of hazardous substances are stored), and
(ii) other workplaces. (where less quantities of chemicals are used)

While all workplaces that use more than 100 litres of most chemicals must have an emergency response plan, there is an additional call for a site safety plan, with suitable risk analysis, for the high hazard areas.

But what is a safety plan? The HSNO Act goal would argue that, for chemicals at least, the safety plan is: "To protect people, communities and the environment against the adverse effects of hazardous substances and new organisms" while maintaining the benefits of these.

Outside of a few international players, many New Zealand firms have not had significant experience in the preparation of safety and risk management plans, especially for chemicals and other workplace hazards, along with the other identifiable risks inherent in the workplace. So, how do you prepare a hazard risk analysis ?

There are many methods of preparing a safety plan and unfortunately (Australian) government guidelines are often not specific, to allow 'flexibility' within the marketplace (and possibly avoiding accountability issues at a later date).

Many titles spring to mind when considering safety systems such as qualitative and quantative techniques, Sitesafe, Hazan, Hazop, Haccp, and even the tried and true 'Look right, look left, look right' before you cross the road.

Risk is with us always, but how do you write a safety plan for this? What items should be considered in a useful safety plan? While many are covered elsewhere in the marketplace, for the purposes of information only, we will consider one method from Hazan and Hazop techniques as follows:

Key aspects of hazard studies

- Define a purpose (or mission) such as: "For the protection of employees, the public and the environment against all injury" or to adopt the current Worksafe criteria "For all workers to get home safely".
- Define goals or targets.
- Define the minimum acceptable criteria to meet your goal (eg: 1 lost time injury per 10000 work hours or No spills outside of our site, etc).
- Develop the method to achieve the above goals.
- One method, namely the 'Hazan method' is to show that 'all potential hazards that may occur in a workplace are identified, and all reasonably practicable steps are taken to control them'.

(Note: This is not only sound business safety practice but a method of defence under 'strict liability' legislation such as most safety legislation where the onus is put on the employer to achieve results through 'guilty till proven innocent', rather than a difficult need for the injured party to prove 'negligence'.

The Hazan method divides the workplace, project or process into six hazard study phases based on a project based criteria as follows:

1. **Hazard study 1: Project exploration.**
Identify hazards associated with process, workplace or chemicals. Identify any major environmental problems and assess suitability of proposed sites. Establish numerical hazard criteria where appropriate. List statutory authorities who shall be consulted.

2. **Hazard study 2: Project specification**
Prepare and examine process flow sheets for all the steps in your workplace process. Identify significant hazards. Assess plant and operational procedures/ workplace practice. Indicate areas where re-design is appropriate. Design against the relevant hazard criteria. Prepare environmental impact assessment when necessary.

3. Hazard study 3: Process design (sometimes called Hazard & Operability Procedure, Hazop)
Critical examination of workplace and plant operation with reference to firm process flow line diagrams. A process flow diagram is just the breaking-down of often complex work procedures into simple controllable steps (eg: computer flow diagrams (see attached)). One can then analyse the possible hazards at each step and work out methods to design these out of the process or methods to minimise the risks of the hazard occurring.

A good hazop procedure should involve ALL of management, process designer, workers and process operator (accountant optional) to ensure a balanced and inclusive problem solving culture.

In cases where batch or continuous plant, and or automated safety systems are involved one can use piping and instrumentation diagrams and risk checksheets to facilitate a comprehensive analysis.

Draft operating instructions maintenance methods. Transient operating conditions & emergencies

4**. Hazard study 4: Process construction/ implementation**
Once the process flow has been designed and implemented in accordance with Hazard study 3, then the operation can be operated for an agreed period, and then again reviewed (with feedback from working group) to determine if the agreed hazard protection has indeed worked and any areas where this may be improved.

Safety review verifying that the provisions in all previous studies are fully implemented

5. Hazard study 5: Process commissioning/ Implementation
Once the process flow

KEY ASPECTS OF HAZARD STUDIES – FOR PROTECTION OF EMPLOYEES, THE PUBLIC AND THE ENVIRONMENT

Project Phase	Pre-Sanction			Sanction			
Stage	Project Exploration	Process Specification	Project Specification	Design	Construction	Commissioning	Operation
Study Phase	1	2		3	4	5	6
Action to be taken in study	Identify hazards associated with process chemicals. Identify major environmental problems and assess suitability of proposed sites. Establish numerical hazard criteria where appropriate. List statutory authorities who shall be consulted.	Examine process flow sheets. Identify significant hazards. Indicate areas where re-design is appropriate. Assess plant. Design against the relevant hazard criteria. Prepare environmental impact assessment when necessary.		Critical examination of plant operation with reference to firm engineering line diagrams. Draft operating instructions maintenance methods. Transient operating conditions & emergencies	Safety review verifying that the provisions in all previous studies are fully implemented.	Safety inspection of plant	Final review to confirm that the design intent has been fulfilled. Confirm that the hazard study procedure has been followed and that reports and other documents are available and in place.

has been designed and implemented in accordance with hazard study 3 and reviewed under hazard study 4, then after a period, the process steps can be formalised in the operating procedures and accompanying process flow (operations) diagrams and formal procedures documented so that the operational procedures, and management are seen to have taken all practicable steps in case of an incident, and that workers are protected against an incident occurring.

6. Hazard study 6: Process operation review

Once the process flow has been designed and implemented in accordance with hazard studies and the operational processes have been tested for functionality and practicality for a period, a final review of procedures and documentation is carried out to ensure that the preferred process flow diagram is identified, and the required safety operational procedures are implemented and in place such as: emergency response plans, PPE, guarding, signage and environmental, user and worker protection is in place.

Please note that a good hazard analysis procedure (HAZAN) is an iterative procedure, with a feedback loop, in that if any incidents occur or process circumstances or methods need to change, then the HAZAN team can be rapidly reconstituted to solve the issue.

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Never-ending nightmare for BP

The Gulf of Mexico explosion and Macondo oil spill and rig collapse in 2010 has become a never-ending nightmare for BP which now faces a possible additional $14 billion fine.

It has already been sued by thousands of individuals and businesses along the USA gulf coast that were affected. And tens of billions in costs have already accumulated. Shares are now trading at 40% less than before the Deepwater Horizon incident. BP has shrunk dramatically and it has divested assets worth more than $38b and rumours continue to circulate that it might be a takeover target.

BP had budgeted for a total bill of $43b, including more than $14b on clean-up already absorbed by its balance sheet. However, the penalty that could be imposed under the Clean Water Act (proceedings began in January in New Orleans) could exceed its provisions by $10.5b.

The company faces a Louisiana judge-alone in the case, who so far has shown little sympathy. The killer blow for the company and its subsidiary BP Exploration & Production is the accusation in the first phase of the legal proceedings in 2013 that it was guilty of gross negligence and willful misconduct, which immediately quadrupled the potential dollar penalty per barrel of oil leaked, BP could be forced to pay.

BP has challenged that interim ruling in the Supreme Court, but it could be years before it is settled.

Rational regulations

by Anthony Lealand

The creation of new regulations, badly needed to replace the present complex and labyrinthine arrangements, needs to be done with attention to, firstly, the process by which they are going to be created.

When this question of complex and labyrinthine was put to a large group of people, only one raised a hand to say they thought the regulations were clear and straightforward. However, this was someone whose business is studying the regulations. If it requires a full-time occupation studying the regulations to understand them, it leaves little time to conduct business.

Taking the present regulations then chopping and changing them, restricts one's thought to what is on the page in front of you. It's no use saying I will leave this one out and modify another one, because we don't have the clarity of vision of a clear oversight. Firstly we need to address what we are attempting to achieve.

Questions to be asked are:

- Do we need to regulate this?
- Why do we need to regulate this?
- Has it been in the public domain for years without problems?
- Has it been in the industrial domain for years with out problems?

The question of the history of problems needs answering from accurate statistical evidence. Just saying this is dangerous might well be true, but how many injuries result from it? Unfortunately hospital records are not easily accessed, and evidence of what caused the injury is frequently wrong. The nurse or doctor's interpretation of what was said by a distressed person may not be good, accurate information.

A little science ...

Then we need to look at how industry or the public use whatever it is we are considering regulating. Here the input from industry, from the public and from technically competent people, may indeed show that regulation is going to do little or nothing to improve the circumstances.

A little science would go a long way to determine whether a regulation is doing anything to improve the outcome of an incident, or if the incident will be significant.

If the regulation is considered desirable, is there a way of carrying this out?

One particular regulation specifying the radiofrequency fields around class I products, unfortunately has no way of being addressed as there is no equipment capable of being used by non-specialists in the field for measuring these over a very wide frequency range.

Observed in the breach

We have a further input to the decision-making process – looking at the past regulations, what they set out to achieve but, more importantly, were they able to be fully implemented?

I can think immediately of half a dozen regulations, very costly to implement, that have never been seriously implemented, or as the expression goes, more often observed in the breach than in the observance.

Think of the labelling regulations and how much had to be done in researching the wording of a label to determine if it could be understood.

Only when we have a good groundwork of the following can we proceed to write regulations:

- Is it necessary to regulate?
- Is there an accurate history of incidents?
- Where can we get good information as to the type of regulation required?
- Is there science to base these regulations on?
- Are there clear and obvious quantity or volume levels below which regulation is not needed?
- Are there scientific or industrial tests that can be done to determine indeed if there is an issue?
- What inputs from the industry or public do we need to even begin to frame the regulations?
- Is there a way of implementing these regulations with the technology available at reasonable prices?
- Do we have regulations that are simple and easy to understand?
- Review all the preceding process to see if we have got it right, including putting this out to industry for them to review.

Certainly any change has pain associated with it, but when clarity and simplicity and workability are obvious, the adoption of the new is far more easily assimilated.

– Anthony Lealand
Test Certifier 000040
CEO Firework Professionals Ltd

Minister to address AGM

The Minister for Workplace Relations and Safety, the Hon. Michael Woodhouse, will address the Institute's AGM and seminar on the Health & Safety Reford Bill and Hazardous Substances.

Also on the programme is:

- Design and use of hazardous substances in Industry – John Hickey, CEO Abstel-Glyde Ltd;

- Maintaining professionalism in a changing world – Kieran Devine, former CEO Institute of Professional Engineers NZ, GM energy sector);

- Implementing the H&S reforms and hazardous substances – Worksafe/EPA;

- Boom, Bang, Bust : Fireworks and Class 1 HS in NZ – Anthony Lealand, CEO Firework Professionals Limited;

- NZIHSM Forum and AGM:
Current affairs and Issues: HSNO & H&S Reform Update.
Recording HS – Preparing Flashpoint, our window to the world.

Registration form available from office@nzihsm.org,nz

NZIHSM Members only: Proxy
It is important that the AGM of the NZIHSM achieves the quorum requirements as outlined in the constitution especially to allow the meeting to pass changes to the constitution where recommended by the executive. In order to achieve this we ask that all recipients complete the proxy form to the NZIHSM office:
Tel : 04 802-4078 Fax: 04 384-4710 office@nzihsm.org.nz

The seminar and AGM will be held begin at 9.15am on Thursday 12 March 2015, in the Tasman Room, Abel Tasman Hotel, 169 Willis Street, Wellington.

Bhopal lessons live on

One night of horror at Bhopal may now be 30 years distant, but the legacy of the tragedy lives on as a series of lessons to anyone involved in dangerous chemicals.

The Union Carbide plant failed and spread a cloud of killer gas over the Indian town, essentially because the plant and operators got into a downward spiral of make-do's and solutions not complying to design.

It was dubbed the world's worst industrial accident. The government of Madhya Pradesh confirmed a total of 3787 deaths related to the gas release. A government affidavit in 2006 stated the leak caused 558,125 injuries, including 38,478 temporary partial injuries and approximately 3900 severely and permanently disabling injuries.

The tragedy continues into the next generation with mutations and birth defects.

Casualties laid out as the death and injury toll begins to spiral upward.

Risk consultant David Slater of Cambrensis, who was involved in the aftermath, commends the following quote from a very good engineering appraisal of the tragedy:

When you choose not to investigate a chronic failure – **remember Bhopal**.

When the right choice is not the most economical choice – **remember Bhopal.**

When choosing to accept actual operation because you cannot get expected or design operation – **remember Bhopal.**

When designing a solution that manages a hazard instead of eliminating it – **remember Bhopal.**

When tempted to execute a procedure that way you think it should be written instead of how it is actually written – **remember Bhopal**.

When thinking about substituting engineered equipment with people – **remember Bhopal.**

When you perform a safety audit – **remember Bhopal.**

When redesigning a system to make it 'safer' – **remember Bhopal.**

When operators have concerns with a decision you are about to make – **remember Bhopal.**

When making changes for the sake of improving personal safety – **remember Bhopal.**

The Bhopal plant rusts.

History decides merits of capacity planning

'Think Big' was a noted capacity planning decision where it was decided that New Zealand required its own oil production capacity to counter rising oil prices. History decides the merits of capacity planning.

Capacity has traditionally been a term associated with manufacturing facilities but has also been used in recent times for service organisations. Capacity is typically the volume of output per time elapsed and, in general, is the rate of production capability of a facility (i.e.: for a car production operations the capacity may be 100 cars/day or for a paint facility the capacity may be 10,000 litres/day.)

Capacity planning is an initial process used when an organisation is considering producing more product or a new product. The capacity requirement is also an important factor in the choice of technology most appropriate for the organisation. Capacity requirements can be evaluated for either long or short-term requirements dependent on the stability of the perceived or known market.

Specific decision points for capacity planning are:

- determine capacity objective or strategy for the organisation;
- assess existing capacity;
- forecast capacity needs (long and short-term horizons);
- identifying various options to modify or achieve capacity;
- evaluate technology, personnel and financial alternatives;
- select the alternative best suited to the capacity requirement and strategy.

Measuring existing capacity seems simple, however, due to daily fluctuations, differing product mixes and variables the capacity measurement is best taken over a significant period such as a yearly cycle.

The time period for capacity planning is important as the choice of capacity has significant downstream effects on the best technology and location. For this reason the use of long as well as short-term planning is important.

Short-term

In New Zealand, due to the small size of the local market and seemingly rapid market fluctuations, the responses to capacity planning often mean that short-term solutions are adopted for increasing or decreasing capacity requirements. Typical methods for short-term capacity changes include:

- inventory increases during slack periods;
- lengthen short-term delivery promises;
- work force alterations (utilising overtime and additional shiftwork);
- multi-skilling of workers to handle multiple operations;
- process design to increase productivity at each work station;
- subcontract parts of production and share outside capacity.

The choice of method is often dependent on whether the product manufacture is capital or labour intensive and whether or not inventories can be stored.

Long-term

This is most necessary when decisions as to plant location and process technology are to be made.

For long-term capacity planning, the decision as to how to expand the available resource base should be equally tempered with the decision on reducing the capacity at a minimal cost should this become necessary. Selling off existing facilities, inventories and equipment

can often be an expensive exercise in a declining market and the choice of capacity, technology and transferability of the process to other products should be part of the capacity planning process.

Global considerations are also gaining increasing significance in the capacity planning process.

Tools

A variety of numerical tools and modelling approaches such as linear programming, computer simulation, decision tree analysis are often used in the capacity planning process. These can be very useful in providing an analytical tool and ensuring that emotive variables do not dominate the decision process.

However, in all such approaches, the factors of human psychology, worker availability and motivation and behavioural aspects should always form part of the modelling process.

Overall, in capacity as well as in general planning, some prediction of the future is necessary and because of this some future flexibility is often the key ingredient.

Abstel-Glyde is a team of industrial engineering specialists.

(0800) 85 4444.

Judge disturbed by Raetihi spill

The sentencing of Ruapehu Alpine Lifts Ltd in November last year is the first case known to **Safeguard** in which a prosecution has been brought by two informants – the Manawatu-Wanganui Regional Council and WorkSafe New Zealand – under three statutes: the Resource Management Act, the HSNO Act, and the HSE Act.

The company pleaded guilty to one charge under the RMA brought by the council, and to two charges under the HSNO Act and one under the HSE Act, brought by WorkSafe NZ. Judge B. P. Dwyer sentenced the company to a fine of $240,000 on the RMA charge, and to a total of $60,000 on the two HSNO charges. He convicted and discharged the company on the HSE Act charge (Ohakune DC, 6 November 2014).

In 2006 RAL commissioned Petroleum Services Ltd to replace the in-ground diesel tanks at Turoa skifield with an above-ground tank system. Teething problems saw a booster pump added to the container later that year, the outlet of which was connected via T-piece adapter to two flexible hoses, each of which was connected to solenoid valves which served the two delivery lines to fuel dispensers on the skifield.

PSL conducted regular maintenance on the system until RAL took over in 2008.

In late September 2013 the container was used to pump diesel to a chairlift. When the process was completed the booster pump continued to operate in error, even though the solenoid valves had closed. The resulting pressure build-up led to one of the flexible hoses becoming detached, and some 19,000 litres of diesel were pumped out of the container onto the ground.

The following day staff discovered the booster bump still operating and turned it off, but failed to notice visible signs of a diesel slick and the smell of diesel. The spill was only discovered a few days later after the regional council had received complaints from Raetihi residents that their water supply was contaminated, and diesel was present in the Makotuku Stream – the town's source of water.

Investigations revealed the failure occurred because of the lack of pressure relief valves on a section of the container's delivery hose, and the use of non-industry approved hose clamps, which led to the delivery hose separating from the pump's hose tail.

The council and WorkSafe agreed the RMA breach should be viewed as the lead charge, because the spill was significant in volume, occurred in a national park, and contaminated a

town's water supply. Of the three remaining charges, WorkSafe viewed the breach of ss109(1)(e)(i) and 114(1) of the HSNO Act as the most important, in that RAL had failed over a period of five years to ensure a stationary container system was maintained to contain a hazardous substance without leakage.

The other HSNO Act charge was a breach of part 4 of the Hazardous Substances (Emergency Management) Regulations 2001 in that RAL had failed to ensure an emergency response plan was tested every 12 months. The HSE Act charge was under the HSE (Pressure Equipment, Cranes and Passenger Ropeways) Regulations 1999, that RAL had failed to notify WorkSafe of a diesel spill as soon as possible after the event.

Overlap on charges

Judge Dwyer acknowledged there was overlap between the RMA charge and the lead HSNO charge. If the failure to maintain the container was to be a factor in sentencing on the RMA charge, and to be a key part of the HSNO charge, then RAL would be subject to double jeopardy in setting penalty. He resolved to fully consider the failure to maintain in the context of the HSNO charge, and to treat it as only a contextual factor within the broader RMA charge rather than one which would elevate the starting point for the RMA penalty.

The judge said several aspects of the case disturbed him, including that RAL's operations manager was unconcerned when advised that following a manual tank reconciliation some 15,000 litres of diesel could not be accounted for, as it appeared previous reconciliations had been viewed as inaccurate. There was conflicting evidence as to when exactly RAL staff knew of the spillage, but in any case the judge described the company's response as "totally inadequate".

"The combination of a running pump, an empty diesel tank and a blown hose which was known to the defendant's staff members [hours after the spill] obviously required immediate and vigorous investigation. That was not done."

On the lead HSNO charge, RAL said its maintenance of the container system consisted of monthly visual checks by its maintenance manager. It conceded it had no staff with expertise in such above-ground container systems, and that it could produce no records to verify the extent of its maintenance history. Mandatory annual checks by an approved contractor were not carried out, and a post-spill inspection of the container system revealed faulty sensors and a waterlogged relay switch that contributed to the discharge.

Lessons learned from spill

Lessons were learned in the wake of the Ruapehu diesel spill, according to Horizons Regional Council's Nic Peet.

The diesel spill into the Makotuku River last year generated significant public interest and had a considerable impact on the Raetihi community. It occurred in a national park and dual World Heritage Area with high environmental and cultural values.

"Horizons has concluded its investigations into the incident and provided this information to the Court as part of its prosecution of RAL. We are pleased that this matter, put before the Environment Court, has now come to a close and a fair decision was made. We believe that key lessons have been learned both in terms of fuel storage on Mt Ruapehu, and around the country in national parks.

"The incident could have been avoided with better maintenance and management of equipment and a better spill response immediately after the incident by RAL. The need for operators in such situations to first do everything to avoid a spill and then have well rehearsed plans in place to mitigate a spill is clear."

Horizons recognises the fact that RAL pleading guilty saved considerable resources and time, and is pleased RAL acknowledged its role in the spill, he said. "Once authorities had been alerted, RAL worked hard to assist in the clean up and to try and help the affected community. We hope it can move forward with the appropriate procedures in place in order to prevent a similar incident occurring in the future."

Summer

WorkSafe acknowledged there were deficiencies in PSL's original design and installation of the container, but contended that inadequate maintenance was a significant factor in the system's failure.

Sentencing, Judge Dwyer noted the container was located in a particularly vulnerable environment, and that poor maintenance had persisted for five years. He adopted a starting point of $135,000 for the failure to maintain charge, and $15,000 for the lack of an emergency response plan. He granted a discount of 15% for co-operation, and a further 25% for a prompt guilty plea. Then, taking all four charges into account, he determined an overall penalty of $300,000 would be appropriate.

Maintaining the RMA penalty at $240,000 arrived at earlier, he adjusted the two HSNO penalties to $51,500 and $8500 respectively, giving a total fine of $300,000. The judge said he did not wish to diminish the significance of the charges brought by WorkSafe, or to imply that the RMA takes priority over the HSNO and HSE Acts. Rather, both informants had agreed the RMA charge was the most significant, and the adverse effects suffered by the Raetihi community could be acknowledged by a payment to the prosecuting authority which represented that community.

First published in **Safeguard Update, www.safeguard.co.nz.** Reproduced with permission.

Uncle Archie

Summer

Much of the country has enjoyed a hot and dry summer, but there are always many sides to an issue. One of the downsides of our dry summer has been the drought-like conditions on much of the east coasts and resulting bushfires that have occurred therein. Of course to fight these fires, fire crews have relied on water supplies from local rivers and swimming pools. This is an often unconsidered side-effect when the general removal of school swimming (fire) pools are being instigated.

Christmas consulting

The EPA may have worked out a useful method of limiting difficult consultation replies to their proposals for the 'Reform of Hazardous substance Management under the HSNO Act' such as 'Proposals for Notices for Classification, Labelling, SDS and Packaging'. While possibly coincidental, releasing submissions for consultation in late November with end dates in early February, should take good advantage of the New Zealanders proclivity to holiday over this period.

H&S Reform Bill detail

Archie still believes that 'Hazardous substances' should be mentioned in the goal of the proposed H&S Reform Act. Archie also believes that all toxic properties including eco-toxics should be considered.

New Worksafe protocol

Some correspondents to Archie have pointed out that the 'new' telephone answering service at Worksafe is now no longer able to provide contact details for Worksafe employees. While this 'new policy' may indeed save time for the employees, it does run the risk of making it very difficult to communicate directly.

Approved handler consultation

In response to a member's query, while we understand that test certifiers and NZIHSM were going to be asked to participate in the Approved Handler sub-group by MBIE late last year, this has yet to occur and we will reply if it does, or otherwise contact them directly.

The explosive question

A test certifier was rung recently and asked whether it was OK to store 35 tonnes of fertiliser in their warehouse in Auckland. Now fertiliser sounds innocuous enough, but on further questioning it was found to be potassium nitrate – also known as gunpowder. It was suggested that Auckland may not appreciate a spectacular display and that suitable ignition control and isolation requirements be considered!

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!

Codification conundrum

Some employers, with the best interests of their staff at heart, are wondering which law or regulation or best practise to observe and which to break in the event of a fire.

The conundrum arises as experts wrestle with producing the Australian/New Zealand handbook on a raft of hazardous substances and initial response.

A small example: an urgent change is suggested to SAA/NZS HB76: 2010 Dangerous Goods – Initial Emergency Response Guide (HB76) to include the definition of a 'small fire' and 'large fire' in the glossary which would affect all guides and to update the small fire section of Guide 50 (Ammonium Nitrate, e.g. UN1942) and Guide 51 (Ammonium Nitrate Gel, e.g. UN3375).
Sounds easy?

Look more closely … HB76 includes emergency response guides with standard headings and sub-headings with accompanying advice that may also help to determine offensive or defensive tactics.

Under the fire heading are two sub-headings (small fire and large fire). No definition of these sub-headings is provided in HB76's glossary – instead it is left up to the user to determine.

The NZFS proposes that some guidance is now required on what a small and large fire is. This change may mean that a defensive position is taken earlier to improve the safety of a responder and the community.

While HB76 is for dangerous goods, it is also used for storage incidents outside of the immediate transport chain. AS HB76 is not exclusive to professional emergency responders, a wider and more conservative perspective on what a 'small fire really means, is useful.

A definition primarily developed by Queensland Fire Rescue Scientific Branch and the NZFS incorporates collective experience contained within the HSNO regulations. Change to Guide 50 and 51 "small fire" definition: include under the small fire subheading "any fire involving less than 25kg of ammonia nitrate".

Rationale for change to Guides 50 and 51.

The risk of injury increases significantly when the body is insulted by overpressures exceeding 3 psi. A fire involving 25 kg of ammonium shows, if it were detonate, that firefighters need to be more than 50 metres distant to assure the safety of personnel. So a fire involving at least 25 kg of ammonium nitrate should be considered a large fire because of the potential impact of a detonation. That puts non-firefighters at a distinct disadvantage.

Overpressure (psi)	Ammonium nitrate (kg)			
	25	1000	26400	52800
1	122 m	418 m	1246 m	1570 m
3	50 m	171 m	510 m	641 m
5	34 m	117 m	348 m	439 m
14	17 m	58 m	173 m	219 m

With us so far?

Now on to propose glossary changes.

- **Small Fire**: A fire involving a surface area less than of 5 m² or involving less than 20 litres/kg of a substance, or a fire with such characteristics, is likely to be at or exceed the capabilities of a person other than a fire-fighter to safely extinguish it.
- **Large Fire**: A fire that is greater than small fire.

Glossary change rationale

The Hazardous Substances (Emergency Management) Regulations specify (Regulation 23) the capability of fire extinguishers: "Each fire extinguisher required by regulation 21 must be able, when used by one person, to put out a full- ignited pool, 50 mm deep and at least 6 m² in area, of a flammable liquid with properties equivalent to those of n-heptane".

The fire extinguisher's capability is set as a performance standard similar to the test method in AS/NZS 1850:1997 Portable fire extinguishers – classification, rating and performance testing. Therefore, a minimum rating 30 and classification B should meet the performance standard. This equates to a 9.1 litre foam extinguisher with a rating of 3A:30B or a 2.1 kg dry powder extinguisher with a rating of 2A:40B:E.

Regulation 23 performance standard (using 300 litres of heptane) was tested at the 2005 Safe Air conference. The initial attack using a 30B extinguisher and subsequent efforts using 2 x 80B fire extinguishers were unable to extinguish the fire. Attendees (non-firefighters) reported the radiant heat far exceeded their ability to get anywhere near to the test pan.

Therefore the Fire Service considers a fire of 6m² to be a large fire.

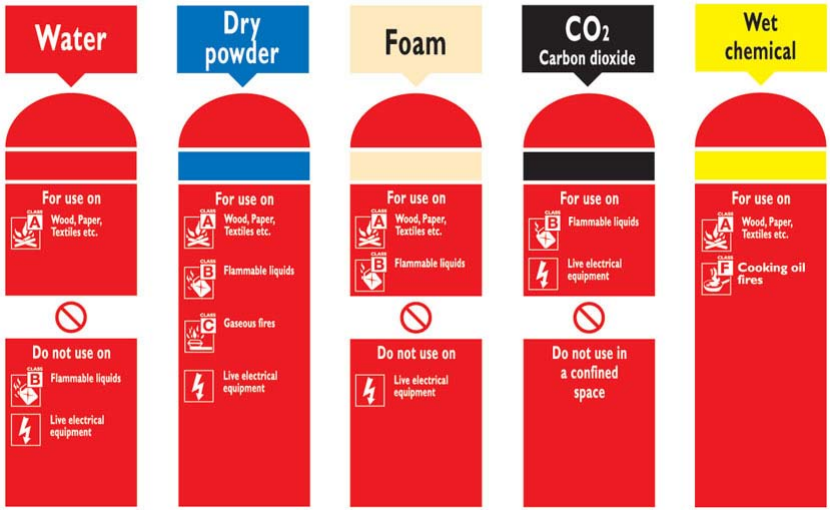
And you thought fighting fires was only about squirting wet stuff on the hot stuff?

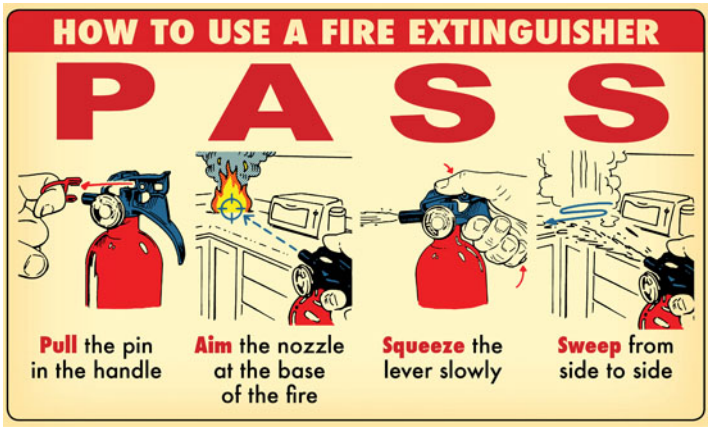
But to get back to the original contention… if a person uses an extinguisher, but can't reasonably and safely extinguish the fire, then it is not a small fire. However, extinguishers are of varying size and contents, so the premise begins to fall over.

One test certifier, when asking about employer training and use of a fire extinguisher, was told: "We need to have

extinguishers on site by law, but we don't train people to use them, because all we want staff to do is walk away and not put them in harm's way. Then ring 111".

So all the best backroom work in the world can stumble on the desire to do the right thing – but the problem would seem to be, from whose perspective? The industry and the fire services have a true conundrum here – hitting a small fire early could save hundreds of thousands of dollars in damage and loss of production, but the fire service does not want any dead heroes.





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