AUSTRALASIAN INSTITUTE OF DANGEROUS GOODS CONSULTANTS

AIDGC

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Conference

"Feedback from those attending the conference has been very positive."

STORE-SAFE®

This issue of the AIDGC Newsletter is sponsored by Store-Safe.

The second AIDGC Conference was held on Thursday 18th September 2003. The conference was attended by approximately 50 AIDGC members and 30 industry and government representatives.

The morning sessions included reports from WorkCover NSW, Environment Protection Agency and the Department of Infrastructure Planning and Natural Resources. These reports provided detailed updates on proposed changes to Dangerous Goods Regulations, ADG code and transport regulations, and Major Hazard Facility regulations.

The morning session also included a very informative report on the introduction of new Dangerous Goods Regulation in Queensland.

The afternoon sessions provided detailed discussion of SEP 33, NSW policy for Hazardous and Offensive Industry. The importance of this policy to many AIDGC members has increased in recent years. The final speakers discussed the increasing role of risk assessment methodology in dangerous goods assessments.

Feedback from those attending the conference has been very positive. Many members, and also speakers advised that they appreciated the interaction between speakers and the audience. This interaction allowed speakers to identify and focus on matters of immediate concern.

Thanks to the conference organising committee for another successful conference. Many thanks also to the speakers for their excellent presentations.

For the convenience of members all conference papers are available on the AIDGC website.

Michaekl Chan-Sew presents to delegates on WorkCover developments

Chris Flannery addresses delegates at the 2003 Conference

Conference delegates enjoy the presentations by keynote speakers.

BUMPER ISSUE
Due to the Editor's busy work schedule we have combined the Spring & Summer issues

IN THIS ISSUE

Testimonial

Philip Butt

A testimonial dinner was organised by the AIDGC in honour of the contribution Philip Butt has made to dangerous goods management in NSW – and through tireless work on Australian Standard committees to Australia's high standing on dangerous goods management throughout our region.

The following is a summary of an entertaining presentation delivered by Ross Underwood on behalf of the AIDGC.

Phil Butt retired in January this year, after a very distinguished career within the NSW Government, completing his career in the position of Chief Inspector of Dangerous Goods.

Phil grew up in Sydney completing his secondary education at North Sydney Boys High School. He attended Sydney University, completing his Bachelor of Science degree and commencing his public service career at the Department of Mines and Explosives. His specialist dangerous goods career started with an appointment in the explosives section in October 1965.

Phil was involved in drafting the NSW Chlorine Code, having what he describes as *"...the rare privilege of inspecting more than 50% of the State's sewerage treatment plants, water treatment plants and municipal swimming pools"*. He also was involved in drafting the NSW Dangerous Goods Act and the Dangerous Goods Regulations. He retains an encyclopaedic knowledge of these, other statutes and references. Phil's involvement continued with the development of the Explosives Code and the ADG Code, editing Volume 2 of the 6th Edition of this Code. Phil's international career commenced in 1992 with his involvement with the UN process of developing recommendations at the 2nd International Conference of Chief Inspectors at Geneva.

Ross Underwood addresses guests at the testimonial dinner held in honour of Philip Butt.

Phil's work in Australia on development of national standards has been greatly appreciated and will be missed. He was the longest serving Chairman of Committee EL 29 – approval of electrical equipment for hazardous areas, Chairman of Committee ME 15 – LP gas, and has contributed to a number of other standards – no doubt AS 1940 being amongst many that we use in our dangerous goods consulting practices.

Phil enters the semi-retirement part of his career and has a busy schedule planned. Phil has active interests in bushwalking treks, blue water sailing, and 4WD trips to the outback.

Chris presented Phil with honorary membership of the AIDGC. We all thank you Phil for the individual contribution you have made to effecting a better standard of dangerous goods management in our community. ◆

Chris Flannery presenting Philip Butt with his honorary membership of the AIDGC at his testimonail dinner.

AIDGC events 2004

ⓘ **Friday, 5th March 2004 – AIDGC Risk Assessment Seminar and Workshop 1.00 pm - 4.30 pm**

Agenda:

- Open Seminar
- Risk Management Process
- Identification of Risk
- Sample Risk Assessments
- Workshop Exercises
- Summary and Lessons Learned

DON'T MISS THIS ONE !!

ⓘ **Continue the professional development on hazardous area locations.**

ⓘ **Site visits to DG facilities and coal bed methane power generating plant.**

ⓘ **Annual Conference.**

Case Studies

In every newsletter, I endeavour to provide experiences from dangerous goods consultants that may contain lessons to be learned for all of us. For this newsletter, I've drawn two from my own work files as they illustrate practices that have - and may still be occurring - which need to be avoided.

Some of the practices discussed in these two case histories affect our position advising our clients and practising our duty of care.

Case History 1

A premises manufacturing Class 3 PGII and PGIII products gained approval as a designated development in the mid 1990's - fairly recently then. The EIS was supported by various studies including a fire safety report.

The premises gained Council approval and WorkCover licensing for storage of aboveground tanks of various solvents. Large roofed package stores were built inside the manufacturing plant and also included a Class 4.1 store between the flammable liquids store and the manufacturing operations.

The premises required fire sprinklers due to the building size and the hazardous operations being undertaken. Sprinkling extended to the Class 3 and Class 4.1 package stores, which were separated from the on-site facilities by 240/240/240 walls and bunding with outside inground spillage containment pits.

To gain approval, the site had required a preliminary hazard analysis (PHA) and after approval, required the customary studies needed by the Major Hazards Unit of the then Department of Urban Affairs & Planning (DUAP - now known as DIPNR).

These studies included a hazard audit and environmental audit. The hazard audit was undertaken within a period following commissioning to ensure that the site was established with the necessary safeguards and procedures in place. The PHA, final hazard analysis and hazard audit were undertaken by the same consulting firm. A dangerous goods accredited consultant stamped the plans.

The site's ownership changed some time after commissioning and a multinational environmental consultancy undertook due diligence studies, finding the site to have no non-conformances. The site safeguards included stormwater isolation, hazardous area zoning, mechanical ventilation throughout, fire sprinklers and more than adequate bunding. The site is within close proximity to another premises storing larger quantities of flammable liquids.

I became involved several years after the second owner had operated the site, to gain Council approval to change the site's activities. This included internal changes to the hazardous areas and construction of tank farms for C1 and C2 liquids. The existing flammable liquid licensed depots did not need to be altered and fortunately, updated stamped plans for these depots were not required.

This all sounds pretty good, so what's the point of the case history?

A familiarising inspection of the aboveground solvent tanks found no static electricity earthing straps. This is a serious omission and although not costly to correct, raised doubts about the quality of conformance of the other licensed depots at the site. The roof was inspected to see how the internal package stores met Clause 4.3.2(c) of AS 1940. The roof was steel cladding and no protrusion of

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Case Studies

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the walls by the customary 1 m existed. No exemption on file. Many of us have studied alternate equivalent levels of safety and to date, I am unaware of any that have approval. So at this stage, the flammable liquid store is non-conforming and the cost to extend the walls achieving 240/240/240 rating will exceed budget estimates of $100K. Placing a couple of sprinklers on the roof around the perimeter of the internal walls is not an approved equivalent level of safety and would cost approximately $40K for this site.

What are the options available to solve this dilemma? Regulatory authorities have signed off on their involvement with the site based on the accuracy of plans and reports. The original fire safety report had recommended the walls protrude through the roof. Stamped DG plans could not be located. How far do the obligations of these consultants involved in auditing the site and finding no major non-conformances extend to, paying to rectify the new owner's obligations under licences that have already been used? Responses from readers would be welcomed.

Case History 2

The second case history is similar in a way. A warehousing site with existing DG licence needs to increase their storage of Class 8's. A customary inspection is undertaken of all depots which were located in two separate buildings.

The main warehouse had several Class 8 depots, a Class 6.1 depot and large quantities of non dangerous goods. Bunding and signage was missing and has since been installed.

A separate building was used for Class 3, Class 4.1, and two class 8 depots. These were licensed and the consultant's stamped plan was sighted. This was therefore of interest because I have not been inside any mixed Class DG depots as yet, and the way this one was set up would be interesting. The stamped plan on closer study did not list the mixed Class AS/NZS, just AS 1940. A close inspection of the building then proceeded looking for how compliance with Clause 3.2.11 of AS 1940 was achieved. No exemption had been granted nor would it qualify.

To access the two Class 8 depots within the building, the FLT used the same passageway adjacent to the drums of flammable liquids. The doorways isolating the Class 8 depots were standard roller shutters. Bunding was provided. Separation distance from the inside of the Class 8 depot bunding to the edge of the racks of drums of FL was 5 m.

Internal walls of the Class 8 depots were not fire rated. Do you conclude that this is satisfactory? Options available for you to advise the client would be of interest, please advise any ideas you may have.

The corrective steps taken were to remove the Class 8 DG's and relocate this to the other Class 8 depots, and increase the capacity of the Class 3 depot enabling the client to store more flammable liquids. The Class 8 depots inside the Class 3 depot roofed store were deleted from the licence.

It is clear to me that we will often come across mistakes. There is no value in laying blame or criticising those who were there before you came along. Our AIDGC Code of Ethics and Code of Practice are there to guide members on how to perform their duties and obligations. Please ring me if you would benefit from sharing similar experiences.◆

The following new Corporate members are welcomed

Hoslab Pty Ltd
Store-Safe

Newsletter themes for 2004

Hazardous area zoning

Static electricity – remove the mystery of how, when and where with static electricity

The AIDGC advises that the information presented in Technical Notes if for your **information only**.
Specialist advice must be sought before applying any of these technical notes to a specific situation or application.
This is essential when evaluating the use of forklift trucks in flammable liquid areas as described in *Note 1*.

Technical Notes

Note 1.

A Guide for the evaluation of explosion protected FLT used in flammable liquid areas located inside buildings (warehouses and factories)

The following is intended for "general industry"; highly specialised flammable liquids (especially of PG I) and other types of DG (gases, organic peroxides, etc) may require expert involvement.

The checklist applies to INDOOR areas where flammable liquids are stored or handled, ie. which are hazardous areas as defined in AS 2430. The hazardous area usually covers the whole airspace where the liquids are present, regardless of the size of the warehouse/factory or distance between FLT and storage/handling area. Variations are possible but should be documented.

Do not use the checklist for:

- flammable liquids < 500 L kept in closed containers in well ventilated areas; or
- flammable liquids < 50 L kept or handled allowing vapours to escape in normal operation.

In well ventilated areas, an explosion protected FLT may not be necessary for these quantities, provided any unprotected FLT keeps at least 3 m distance from any container not sealed vapour tight. Explosion protected FLT are not required where only combustible liquids (eg. diesel oil, lube oil, edible oil) are present.

Diesel and battery electric FLT can be explosion protected; LPG or petrol-powered forklifts are NEVER explosion protected. Use of non-protected FLT in hazardous areas requires a written exemption by WorkCover. However, it is expected that the new AS 1940 (due in late 2003/early 2004) includes a checklist procedure allowing the use of non-approved FLT in limited Zone 2 areas.

What Approval Criteria Applies?

The FLT must be approved for the correct Zone, and if for Zone 1, also for the correct Gas Group and Temperature Rating.

Zoning

Zone 0 – not relevant (inside tanks etc).

Zone 1 – Where a flammable vapour/air mix may occur in normal operation, eg. drum filling, decanting, vat mixing if the vessels are not sealed vapour tight, solvent wash trays.

Zone 2 – Where a flammable vapour/air mix may occur only in abnormal circumstances and then only infrequently and for short duration. Essentially limited to leaks and spills followed by an effective clean up.

Gas Group (for Zone 1)

Different vapours require different minimum ignition energy, which determines the mechanical design (eg. flanges and seals).

IIa is suitable for all flammable liquids PG II and III (eg. petrol, paint thinner, toluene, kerosene, white spirit, ethanol) and also LPG areas.

IIb is suitable for all of the above and also for some flammable gases such as ethylene.

IIc is suitable for all of the above, all flammable liquids including carbon disulfide and also for hydrogen (but not acetylene).

Temperature Rating (for Zone 1)

Flammable vapour/air mix can ignite in contact with a surface

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Technical Notes

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heated to above the self (auto) ignition temperature, such as an engine exhaust manifold or electric motor housing. The maximum permitted surface temperatures are rated T1 - T6 (450 - 85º C).

The most common rating for FLT is T3 (200º C), which allows use in areas where the LOWEST self-ignition temperature of ANY of the liquids is >250º C, eg. petrol, paint thinners, toluene, kerosene, white spirit, ethanol.

Carbon disulfide with a self-ignition temperature of about 100º C is an example requiring T6 rating (max. 85º C surface temperature).

FLT Approval Plate

Every FLT approved for use in hazardous areas must have an approval plate issued either by Standards Australia or by WorkCover NSW.

Plates issued by interstate Authorities (such as WorkCover VIC) should be "re-approved" by Workcover NSW. An FLT without an approval plate should be regarded as non-approved.

The approval plate should identify the Zoning (Zone 1 or 2). For Zone 1 the plate should also identify Gas Group and Temperature rating.

An approved FLT without identification of Zone or of Gas Group and Temperature rating should not be used in a Zone 1 area.

Checklist to determine if an FLT can be used in a hazardous area

1. *Does the FLT have an approval plate from Standards Australia or WorkCover NSW stating it can be used in hazardous areas or explosive atmospheres?*

   Yes - Continue question 2.

   No - Not to be used in hazardous areas. Q.2-4 not relevant.

2. *Are all packages or containers in the whole storage airspace always kept closed vapour tight?*

   Yes - Zone 2 or Zone 1 approval acceptable. No further question.

   No - Zone 1 approval required. Continue questions 3 & 4.

3(a,b) *Are all flammable liquids limited to PG II and PG III (see MSDS) ?*

3(a) Yes - Gas Group IIa/b/c FLT ratings are acceptable.

No - relevant documentation (hazardous area dossier) containing Gas Group identification required; expert involvement may be necessary.

3(b) Yes - T3/4/5/6 FLT ratings are acceptable.

No - relevant documentation (hazardous area dossier) containing required Temperature Rating required; expert involvement may be necessary.

4. *Does the Zoning <u>and</u> Gas Gp <u>and</u> Temperature Rating shown on the approval plate meet identified (q.3a,b) minimum rating requirements ?*

   Yes - FLT is suitable.

   No - FLT is unsuitable for this area. Expert advice may be required to identify liquids acceptable for existing FLT rating; remove non-permissible liquids.

   Special thanks to the contributor of this article.

Note 2.

A great set of notes from Moore Management's seminar on risk assessment is accessible from AIDGC - useful to review.

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Technical Notes

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Note 3.

Risk Management

Extracted from Daily Telegraph on 18th September, 2003:

"Two Sydney brothers are now more than $300,000 out of pocket after the Land and Environment Court found them guilty of storing explosive and hazardous waste on a site at Moorebank. The Directors were yesterday fined $80K and ordered to pay costs of $55K for illegally transporting and storing thousands of drums of waste. The drums contained oil, solvents and other explosive materials. The site cleanup cost was $177K, bringing the total bill to $312K. The brothers pleaded guilty to the charges.

Note 4.

Would an AIDGC list of references on chemical incompatibility help members? If I get 40 responses, I'll start a compilation for all members and associates.

Note 5.

Some Interesting Chemicals

- Aluminium Alkyl Hydrides UN 3078 Class 4.2, sub-risk 4.3

ADGC properties and observations – a colourless liquid. Ignites on exposure to air and reacts violently in contact with water, acids, halogens, alcohols and amines. Is stored in steel gas tanks. Design of storage facility, fire protection and emergency plans are interesting.

- Picric Acid UN 1356 Class 4.1 PGI

Shipping name: Trinitrotoluene, wetted with not less than 30% water bypass

ADGC properties and observations – very interesting. Problem – how to advise a hospital research department into handling precautions and safeguards.

Other members' exposures to similar interesting chemicals would be of interest in future newsletters.

Note 6.

Interpreting what is Bunding

Are bunded pallets okay for bunding to AS 1940 or AS 3780? No, is the answer at this stage. Bunding must be permanent, it needs to be structurally sound, impervious to the chemicals, have fire resistance (to what FRL?)

Perhaps an article on bunding for a Year 2004 newsletter could be useful – What to use, how to bolt in place, what minimum construction details is needed. **Any Volunteers??**

A prize waiting for a home – AIDGC rewards presenters of articles published in the newsletters with a prize consisting of Australian wine – the Editor decides the winner.

Note 7.

Interpreting Clause 4.2.1(h) of AS 1940. Have you missed this one recently in setting up depots? I almost did. Where two FL depots are separated by distances less than those shown in Table 4.1, you need to aggregate the capacity of the two depots to select the separation distance. Simple, but easy to overlook. ◆

Product News

- Better Drums at St Marys has set up a plant to fully wash out IBC's. Contact: Eddie at www.betterdrums.com.au
- Foam filling of underground storage tanks - seek clarification on progress on official approvals from NSW EPA and WorkCover before using or recommending. BACEL hard foam – visit www.rgfoam.co.uk
- AGST's for diesel fuel complete with tank enclosure, bunding and bowsers are being frequently sighted. An article on these for a future newsletter would benefit us all.
- Store-Safe has released a roofed package store suited to use for printing inks that enables the inks to be metered, blended and pumped to the process area. Weatherproof, made to the high standard of quality Store-Safe is renowned for. Avoids the need for a separate building to be constructed.

Please note: AIDGC does not endorse any suppliers product(s) by publishing this information.

Board Members 2003/2004

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Contributions are Welcome

Editorial contributions to your AIDGC Newsletter are welcome.
Any material should be directed to the Editor, and preferably, be in an electronic format
(Text – Word or in the body of an email, Photographs – .jpg or .tif format)
Please include any relevant by lines, and if necessary quote the source.

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