

# IMPERIAL CHEMICAL INDUSTRIES HEAVY ORGANICS DIVISION

## SAFETY NEWSLETTER NUMBER 29

By Trevor Kletz

### **29/1 IF THERE IS A LEAK OR SPILLAGE OF FLAMMABLE MATERIAL, CALL THE FIRE BRIGADE**

On several occasions recently there has been a spillage of petrol, LPG or similar materials and the Fire Brigade was not called at all or not called for some time. See Newsletter 28, Item 1, for example.

To repeat the advice given in Newsletter 16, Item 1:

*If there is a leak or spillage of a flammable gas or liquid, it may catch fire, so call the Fire Brigade.*

*If it does catch fire they will be ready or on the way in.*

*Don't let the Fire Brigade approach the leak from the downwind side.*

Now another incident has occurred.

Water was being drained from a tank containing LPG. The operator left the job and came back to find LPG running out. He assumed that the spillage would evaporate safely and the Fire Brigade was not called until the manager arrived on the job.

The Brigade should have been called at once. When they did arrive the spillage was covered with foam. As a result, it took a long time for the LPG to evaporate and afterwards some people wondered if it might have been better to leave it uncovered so that it evaporated quickly.

I am quite sure that LPG spillages should be covered with foam. If they are not, the vapour will spread for hundreds of feet and will probably find a source of ignition. If the spillage is covered it may be there for some time but the situation is under control. Possibly a few square yards can be left uncovered and the vapour dispersed with steam.

There is another lesson to be learnt from this incident. When water is being drained from the bottom of a process tank containing hazardous material, the operator should, on no account, leave the drain running unattended. It is impossible to estimate when all the water will have drained off and as soon as the water is displaced a hazardous material is released into the atmosphere — a highly dangerous situation. (Of course, when a tank has been drained of hazardous material, filled with water and handed to Maintenance, then draining can take place unattended.)

A spring-loaded drain valve makes it difficult for the operator to leave the job. A.P. of HOC Piping Section (Ext. B.3244) can give you details of suitable valves.

A remotely-operated valve in the drain line makes it possible to isolate the drain line, if, despite our precautions, hazardous material is running out. See ICI Engineering Codes & Regulations, Group D, Volume 1.6, "Liquefied Flammable Gases — Storage and Handling".

### **29/2 DON'T CLIMB CAT LADDERS WITH ONE HAND**

During our recent survey of sampling methods (Safety Notes 70/16, 71/1 and 71/8) we saw a number of men carrying sample bottles whilst climbing cat ladders.

The Supplement to "Occupational Safety & Health" for March 1971 reports that a man was climbing a cat ladder carrying a clip-board in one hand when he fell off and was killed.

Never carry anything in the hand whilst climbing a cat ladder. Sample bottles should be raised or lowered on a cord.

### **29/3 A FITTER BREAKS THE WRONG JOINT**

A fitter was asked to fit a slip-plate between a pair of flanges which were marked with chalk. Finding it difficult to wedge the flanges apart, he decided, without consulting his supervisor, to fit the slip-plate between a different pair of flanges which were, as it happened, on the other side of the isolation valve. As these flanges parted a corrosive chemical sprayed out on to the fitter's eyes and face. He was wearing goggles at the time but knocked them off as he flung up his arms to protect his face.

One wonders if any fitters on this plant have used their discretion before and broken the wrong joint. Are your fitters quite clear that they must never do this?

One wonders if any fitters had had difficulty with this joint in the past? If so, did the supervisor know of this, and had redesign been considered?

In designing new plants, joints which will have to be slip-plated regularly should be marked on the line diagram and the piping designers should make sure that the joint is accessible and has enough spring in it. If there is not enough spring, a spectacle plate or slip-ring should be specified. As mentioned in Newsletter 27, Item 6, a new Engineering Department design guide and specification gives details.

Finally, the best way to mark a joint is with a numbered tag, not just a chalk mark. The tag cannot get rubbed off and is more definite than a chalk mark.

### 29/4 THREE YEARS AGO

Old-established journals like to quote from their editions of 100 years ago. We cannot look back so far but it may be interesting to see what was said 3 years ago.

"A line was isolated correctly with slip-plates but a plumber broke into the wrong line. This would not have happened if a numbered label had been fixed to the line at the point at which it was to be broken and the number of the label put on the Permit-to-Work".

From Safety Newsletter No. 1, May 1968.

(Safety Newsletters 1—12 have been issued as report No. 0.200,630/A, available from Division Reports Centres).

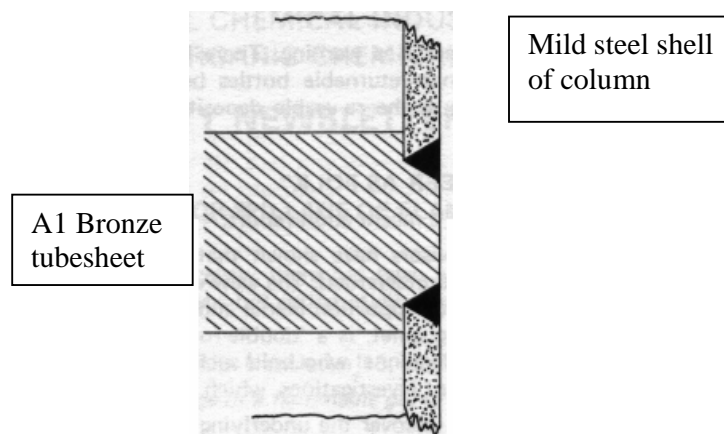
### 29/5 DON'T LET CYLINDERS GET TOO COLD

Some gas cylinders have been found in contact with blocks of DRIKOLD (solid carbon dioxide). This is dangerous. If the metal is cooled to the temperature of DRIKOLD, the cylinder may burst.

### 29/6 UNUSUAL METHODS OF CONSTRUCTION SHOULD BE WATCHED

The recent failure of a vessel in service, fortunately not in a disastrous way, shows how alert we must be when sophisticated or unusual fabrication methods are used.

A mild steel distillation column was fitted with an internal condenser with an aluminium-bronze tubesheet. The tubesheet had the same diameter as the vessel and was welded to it in the unusual way shown opposite:



One of the welds cracked in service and there was an escape of vapour. Fortunately it did not fire.

The vessel was inspected in 1968 and 1970. Nothing unusual was found but we suspect that no special attention was paid to the bi-metallic welds. The engineers had changed since the start-up of the plant in 1965 and their successors did not know of the unusual construction.

So far as we know there are only two similar vessels in the Division but there may be others elsewhere in the Company. If so, the unusual construction (and any other unusual features) should be recorded, and drawn to the attention of the inspecting engineer when the vessel becomes due for inspection.

#### **29/7 A TANK IS SUCKED IN BECAUSE THE CONTENTS CORRODED THE P/V VALVE.**

A tank was sucked in because the aluminium pallets in the pressure/vacuum valve had been attacked by the liquid present in the tank. Do you know that many alcohols attack aluminium?

Before you rush off and have a pallet made from an expensive alloy, are you sure you need a P/V valve? They should be installed on nitrogen blanketed tanks, to save nitrogen. Other tanks should be fitted with them only if the contents are volatile and the tank is filled and emptied a lot; the P/V valve reduces the loss of vapour to atmosphere and this pays for the valve. If the contents are not very volatile or the tank is not filled and emptied very often then an open vent is sufficient. It must be fitted with a flame arrestor if the contents are stored above their flash point.

#### **29/8 "FOR WANT OF A NAIL, THE BATTLE WAS LOST"**

Do you remember the child's poem? For want of a nail, a horse's shoe came off, and the horse was withdrawn from the battle. It was a close fight and one more horseman might have tipped the scales the other way.

On one of our plants a fan extract leaks of carbon monoxide and prevents them getting into the air of a building. A few years ago a man was affected by carbon monoxide. It was then found that the fan damper was shut. There was no label on it to show which was the open position and which was the closed position.

Now much the same incident has happened again. A furnace damper was closed in error. It is operated pneumatically and there was no indication on the control knob to show which was the shut position and which was the open position.

#### **29/9 BOTTLE HAZARDS**

With the coming of Summer — a warning. There has been an increase in injuries caused by broken bottles. The non-returnable bottles being used increasingly for soft drinks and beer are not as strong as the re-usable deposit bottles and break more easily.

#### **29/10 "THERE'S NOWT SO QUEER AS FOLK"**

The following is taken from a recent audit report:-

"Conversations with supervisors have shown that the purpose of an accident or incident investigation is not understood. The view was expressed that such investigations are mainly designed to apportion blame and that the person who reports an incident, instead of keeping quiet, is a 'double-fool', once for having the incident and once for reporting it. Personnel who hold such views clearly do not understand the prime reasons for incident investigations, which are:-

(a) The investigation will uncover the underlying cause of the incident and make suitable recommendations for its removal.

(b) By publishing the incident and subsequent recommendations, an educational role is served in the hope that similar incidents will be prevented elsewhere."

Fortunately, not everybody looks at things the way these people do or there would be no Safety Newsletter.

#### **29/11 RECENT PUBLICATIONS**

(a) Newsletter 19, Item 2, described an incident on a plant on which a single valve isolated two pieces of equipment. Both of them were being maintained. When one piece of equipment was handed back, an operator opened the valve, not realising that the second item was still dismantled. The Newsletter asked, "What system do you use to prevent this happening on your plant?"

Nylon Works, Wilton, use a 'Master control sheet'. We can let you have a note describing the way in which it works.

(b) Safety Note 71/5 describes the effects of some common poisonous and asphyxiant gases. Though there is nothing new in the note, it has been produced because many people are not familiar with the effects.

(c) Many plastic sheets are described as 'self-extinguishing'. They will burn if exposed to a flame but when the flame is removed they stop burning. This is true of individual sheets, but if the plastic is used to line a duct, or even two adjacent walls of a room, it will burn vigorously. A note dated 25 March 1971 gives more details.

(d) A note dated 19 March 1971 summarised an evaluation of the various fork lift trucks that are available for use in hazardous areas and makes recommendations.

e) A recent accident showed that some operators are not sure how to tell whether a cock is open or closed. A set of diagrams has, therefore, been produced showing how to tell whether Audco, Klinger or Truflo cocks are open or closed.

For copies of (a) to (e) or more information on any item in this Newsletter, please write to Miss M..N, Organic House, Billingham, or ring B.3927. If you do not see this Newsletter regularly, and would like your own copy please ask Miss N to add your name to the circulation list.

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