IMPERIAL CHEMICAL INDUSTRIES
HEAVY ORGANICS DIVISION

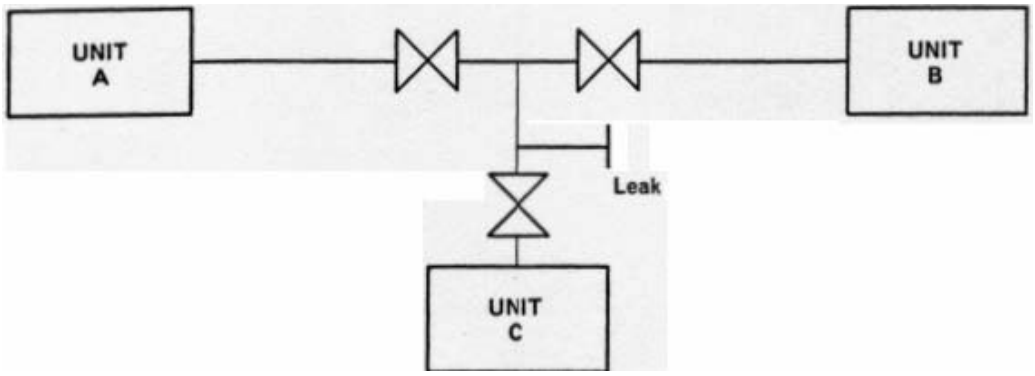
SAFETY NEWSLETTER NUMBER 26

By Trevor Kletz

Congratulations to the Division's three chemical works on their 1970 achievements. North Tees Works completed 2 million hours without a lost time accident, Oil Works completed 15 million hours and Olefine Works 850,000 hours. By the end of the year the long accident-free runs on North Tees and Olefine Works had ended, but Oil Works were still "on line".

26/1 INCOMPLETE PRESSURE TESTS

Newsletter 24, Item I described how a leak occurred during a plant start-up because the pre-start up pressure test was incomplete. While the Newsletter was at the printers another incident occurred.



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Units A, B and C had all been leak tested independently. The line between the 3 isolation valves was overlooked. When feed was started, oil came out of the loose joint.

• Make sure your pressure tests are complete and that no lines are left out. Some people mark the lines in colour on a line diagram as they are tested — this shows up any sections that have been overlooked.

• When feed is started, have a good look round for leaks.

A similar Incident in another Division in 1969 caused two deaths and several serious injuries.

26/2 CONNECTING GAS CYLINDERS TO PROCESS EQUIPMENT

In Newsletter 21, Item 6, I suggested that when a service such as air or nitrogen is used intermittently, it should be connected to the process equipment by a flex which is uncoupled when not in use, or by double block and bleed valves. When the service is used continuously it may be connected permanently, but an alarm should be fitted if the process pressure is liable to exceed the service pressure.

A recent incident shows that these recommendations should be applied to cylinders as well as piped services. The British Oxygen Company recently found some naphtha inside an empty nitrogen cylinder which was sent back to them for refilling. They are not sure where the cylinder had been used — it may have been in the Division or it may have been elsewhere.

The regulator valves on the cylinders should act as non-return valves but like all non-return valves are not 100 % reliable. Obviously we would never connect a cylinder to a plant which is known to be at a higher pressure but sometimes we use a cylinder on equipment which is later raised in pressure. If this is done, the cylinder should be connected to the plant by double block and bleed valves or by a flex which is uncoupled when not in use.

If a cylinder is used continuously but the plant pressure is liable to rise above the cylinder pressure then a permanent connection may be used but a high pressure alarm should be fitted on the plant.

The presence of process materials in a nitrogen cylinder will mean that the next user will have his process contaminated. The presence of process materials in air or oxygen cylinders is much more serious — it could lead to an explosion in the cylinder and it is essential to guard against back flow in one of the ways described.

26/3 METHODS OF RUNNING ELECTRIC CABLES AND INSTRUMENT IMPULSE LINES

Newsletter 25, Item 4 pointed out that cables should either be buried or supported clear of the ground, as if they are laid on wet ground they make an untidy mess and are liable to be attacked by any oil which is present on the surface. Buried cables must, of course, stand up to any chemicals that may soak into the ground or be brought up by a rising water table.

A report published in 1969, No. 0.200,624/A (available from Division Reports Centres) gives detailed recommendations on the way cables should be run in HOC plants. In most cases cables should be run overhead and detailed attention should be paid to fire protection.

26/4 GASKETS FOR FLANGED PIPES

Newsletter 25, Item 2 described the gaskets recommended for flanged pipes. I have been asked to make it clear that while ‘Metaflex’ is a spiral wound gasket to BS 3381, ‘Graphitoil’ is a compressed asbestos fibre gasket impregnated with graphite.

26/5 A PRESSURE GAUGE BLOWS OFF

A hot oil leak occurred recently when a man was closing a Klinger cock to isolate a pressure gauge. The gauge and Klinger cock came off and went into orbit and hot oil came out of the hole.

The Klinger cock had been screwed into a Schedule 40 nipple and there had been some corrosion. On a new plant we would now fit a welded branch and flange between a main pipe-line and a Klinger cock but on many old plants cocks are fitted into Schedule 40 nipples. I suggest these are examined and replaced by Schedule 80 nipples if there is any corrosion or if hazardous materials are handled.

26/6 PLATFORM LORRIES - MAXIMUM LOADS

Do you know the maximum weights that you are allowed to load onto platform lorries of different sizes? If not, we can let you have details.

It is against the law to load more than the maximum weight.

26/7 RELIABILITY

David Whitaker comments as follows on Newsletter 24, Item 10:

“One set of questions posed by your vending machine experience is managerial. For example at Billingham when a machine fails it begins to acquire accusing labels saying — ‘No Tea’ or ‘6d lost’ and people avoid using it. Perhaps someone telephones the correct number to report a breakdown and it is repaired. At the Forum it is probable that no such ‘managerial infrastructure’ exists and it is highly likely therefore that the machine can be in a failed state for long periods.

“If the two machines are of identical manufacture then one can conclude that the management of them is significantly different. If the two machines are of different manufacture then both design and management may be significantly inferior at the Forum”.

Similar problems will arise when we try to measure fault rates for equipment on plants. Will we be measuring the reliability of equipment or the performance of the management?

26/8 SAFETY DISCUSSIONS

This note is to tell you about our safety discussions, though many readers will have been and will know about them already.

Every Thursday morning about 15 people from various Works and Departments discuss some accidents that have happened, usually in the Division, in recent years. Someone explains briefly what happened and, if possible, shows a few colour slides of the damage. The people present then investigate the incident—they question the discussion leader to find out the facts that they want to know, not what the discussion leader wants to tell them. Then they go on to say what they think ought to be done to prevent the same thing happening again.

The incidents discussed range from fatal accidents to ‘near misses’ but they have one thing in common — they are all familiar accidents that keep on happening every few years. After each incident there is a great fuss but a few years later staff have changed, the incident has been forgotten and the precautions have lapsed. By discussing the incidents regularly we hope to keep memories alive and prevent so many repetitions.

I have divided the incidents into five groups or modules and the present plan is to repeat each discussion every Thursday for 3 months and then go onto the next one. So anyone who comes to the lot will have given up 5 half-days over 15 months — not a big sacrifice.

The 5 modules are:

Module 1 — Some accidents concerned with the preparation of equipment for maintenance, including the 1967 fire.

Module 2 — The 1969 Polythene & Nylon fires.

Module 3 — Some accidents caused by the overpressuring of vessels.

Module 4 — Some fires and explosions.

Module 5 — Some accidents which were blamed on ‘human failing’—there was nothing the manager could do — or was there?

Module 4 is running now. Module 5 is new and may start in April.

Illustrated ‘Souvenir programmes’ have been produced for modules 1, 2 and 3.

Sometimes I am asked if I get fed up taking the same discussion week after week. I don’t, because each discussion is different, I never know which way it is going to go, and fresh points keep coming up.

The discussions on Thursdays are for managerial staff. Supervisors and operators may also find them worthwhile. Some works have already arranged similar discussions for all employees, notably Bain Works, Wilton, where a tape recorder is used alongside the slides. If you think these case history discussions will interest the people on your works or plant, then it is up to you to organise them. I will try and help, but I do not have the resources to take them over and run them.

Some readers already have copies of some of my notes and slides. If you have the notes, and still use them, then perhaps you would like them bringing up-to-date. If you have slides and no longer use them, then please can I have them back?

There is more about these discussions in an article in ‘Education in Chemistry’, November 1970 (Copy on request).

For more information on any item in this Newsletter please write to Miss M N, Organic House, Billingham or telephone 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. If you no longer need to see the Newsletter or if we are sending you more copies than you need please let us know so that we can reduce the circulation list.

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