

IMPERIAL CHEMICAL INDUSTRIES LIMITED
PETROCHEMICALS DIVISION

SAFETY NEWSLETTER No. 52

52/1 “ALL THIS POLLUTION AND SAFETY NONSENSE”

“A discussion of issues affecting car design was interrupted by a young journalist who asked if we could ‘get off talking about all this pollution and safety nonsense and ask a few questions about new model policy”

Many readers may be shocked by this quotation (from an article in the *Sunday Times* last year) but it expresses an attitude that many people hold though they may not be honest enough to admit it. Many people feel that being cautious is sissy, and that successful men of action get there by taking chances.

In fact, it is the other way round. Successful men of action are successful because they remove as many risks as possible and carefully weigh the rest before deciding whether or not the advantages to be gained justify the risks. To quote from Admiral Byrd, *“In all my travels and adventures in the interests of science and discovery I have never taken an unnecessary risk. Only the best and safest equipment was selected for planes and ships. Everything was safe that could be made safe.*

“By careful planning and by taking no unnecessary chances my men and I have lived to enjoy the hazards and thrills of adventure and discovery. We found adventure only by planning for safety as far as possible.”

52/2 CONSTRUCTION AIDS LEFT IN

Several accidents or ‘near misses’ have occurred because construction aids were left in when a plant was brought on line. One incident was described in Safety Newsletter No. 30, Item 4.

Another incident occurred on a new plant. Some storage tanks were designed with weak seam roofs. To make construction easier some cleats on the roof were bolted to cleats on the wall. When construction was finished the erectors left the bolts in.

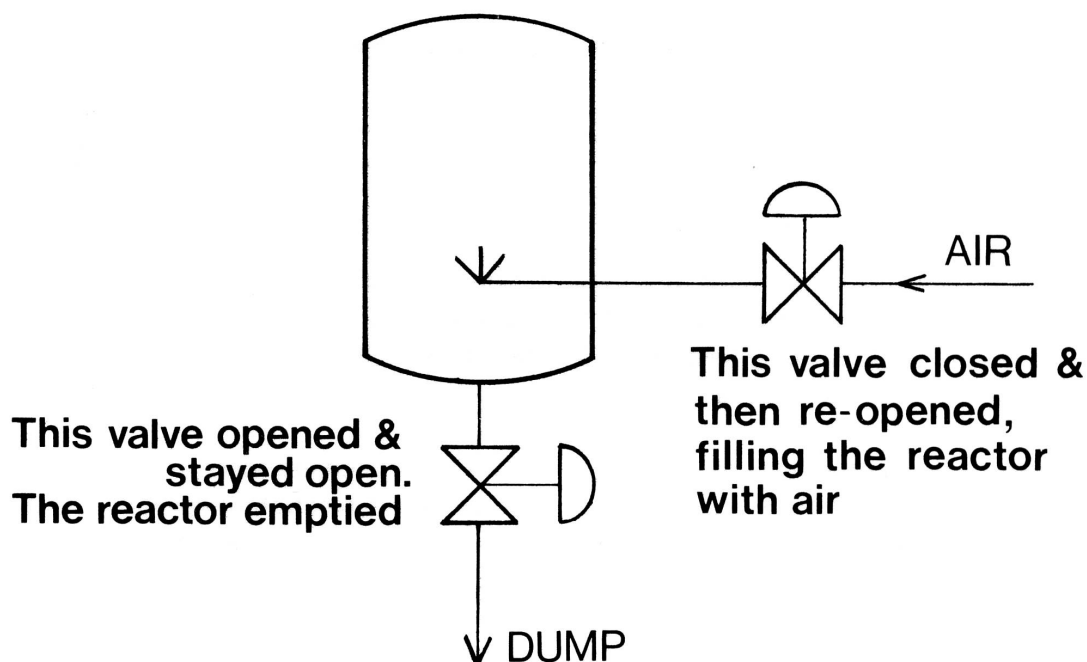
This came to light when one of the start-up team noticed that some of the bolts were loose.

52/3 A NEAR EXPLOSION —TRIPS SHOULD NOT RESET THEMSELVES WHEN THE TRIP CONDITION IS REMOVED

On one of our plants a liquid hydrocarbon is oxidised with air. If the reactor gets too hot a high temperature trip automatically shuts off the air and opens a valve which dumps the contents of the reactor to a safe place.

Recently there was a spurious high temperature trip. The air valve closed and the dump valve opened. The trip condition cleared itself; the dump valve stayed open but the air valve re-opened. As a result the reactor, which contained only a little hydrocarbon filled with air and the atmosphere inside became flammable. Fortunately no source of ignition turned up and the reactor did not explode.

The air valve re-opened because the solenoid switching the air supply to the control valve would not stay in the tripped condition. The solenoid in question has now been replaced by a latching solenoid so that once the trip has been initiated it will not reset of its own accord.



When designing a trip system we should always consider what happens when a trip occurs and then the trip condition is removed. As a rule the trip valve should not re-open automatically. What happens to the trips on your plant?

52/4 A SPILLAGE COMES TO LIGHT IN AN UNUSUAL WAY

An operator started to fill a road tank wagon with a chemical. He forgot to check that the exit valves were shut and that there was a cap on the exit branch.

Later the operator found the contents running out of the tanker. He closed the exit valves and washed away the spillage. As the loss was small - or so he thought - he did not bother to report it immediately.

The chemical is a good foam-maker and the incident came to light when foam went into the river.

Before filling tankers -

Check the valves are shut

Check that caps are fitted on the exit pipes.

52/5 DR A K GREENHALGH

Dick Greenhalgh retires at the end of May after nearly 35 years service. He has been a member of Safety and Loss Prevention Group for the last 2½ years. During his time with us he has read and digested an enormous number of reports, letters and memoranda and from a mass of chaff has selected the grains of wheat which he has incorporated in our *Loss Prevention Guides*. (see *Newsletter 40*.) He has produced 28 in all and, as his final effort, has revised the earlier ones. He has earned a rest and we wish him a long and happy retirement.

The complete set of Guides can be obtained from Division Reports Centres by asking for Report No. 0.200,698/A. In the past we have issued only complete sets. We now intend to issue individual Guides. The following is a list of those that are available. If you would like any of them, please write to Mrs.M.N, Organic House, Billingham or ring B 3927.

<u>Guide No.</u>	<u>Title</u>
1	Pressure Relief
2	Hazard Analysis
3	Furnace Fires and Explosions
4	Vessel Entry Certificate

5	Storage Tanks
6	Static Electricity
7	Clearance Certificates (Permits-to-Work) and Isolation of Plants for Maintenance.
8	Liquefied Flammable Gases — Safety in Plant Design and Operation.
9	Thermal Radiation
10	Ignition Sources and Explosive Mixture
11	Aluminium and Light Metals — Incendive Sparks
12	Electrical Area Classification
13	Flame Arrestors
14	Some Everyday Toxic Hazards
15	Portable Gas Cylinders
16	Electrical Cables on Process Plant
17	Flexes and Hoses
18	Gas Detectors
19	Leaks
20	Breathing Apparatus
21	Reliability and Reliability Data
22	Explosions and Explosion Venting
23	Fire Extinguishers/Fire Fighting Media
24	A Guide to the Legal Responsibilities of Plant Managers and Engineers
25	Safety Aspects of Plant Layout
26	Dispersion of Flammable Vapours
27	Safety in Transport
28	Alarms and Trips

52/6 THREE YEARS AGO - TODAY

CONFINED SPACES UNDERNEATH DISTILLATION COLUMNS

“The skirts underneath distillation columns are often hollow, with an opening for entry. Unless the opening is large, the spaces underneath are confined spaces within the meaning of the Factories Act, Section 30 and an entry permit should be issued before anyone goes in.

If there are valves inside, it should be possible to operate them from outside.

One Works fits grills over the openings to prevent unauthorised entry. They are better than doors as they provide ventilation “.

From Safety Newsletter No. 19, May 1970.

Recently a joint leaked in the skirt underneath a drier. The leak caught fire and the fire was made worse by rubbish which had been left under the skirt by contractors. The report recommends that mesh guards should be fitted over manholes in order to prevent contractors' men using them as storage areas.

The report also recommends that all vessel skirts and other areas where gas can accumulate should be checked every week with a portable gas detector.

52/7 INCIDENTS FROM THE PAST

No. 3 in a series describing some accidents which occurred in the early years of the Billingham Factory.

On 25 October 1928 an explosion occurred in a 12 inch diameter fuel gas main in the main workshop. No one was injured but the workshop was badly damaged.

According to the report the gas line normally operated at gasholder pressure. It had been isolated 5 days before the explosion and left full of gas. There were numerous joints, valves and connections on the line so there was ample time for gas to leak out and air to diffuse in until the mixture inside was explosive. There were numerous sources of ignition in the building.

It is unlikely that air diffused in. It is more likely that when the pipeline cooled at night, air was sucked in.

Modern standards of pipeline construction make an incident like this less likely today. Nevertheless, it is not good practice to leave a line full of gas for a long time without any pressure on the line. Any leaking joint or open drain or vent valve can allow air to get in and an explosive mixture to form.

For further details see Report No. A 102,145, page 34

[Note that in 1973 a 1928 report, nearly 50 years old, was still available. How many companies could say that today? TAK]

52/8 FLUOROCARBON AEROSOL SPRAYS

Newsletter 30, Item 5 drew attention to the precautions necessary with polytetrafluoroethylene or Fluon. If it gets very hot it gives off fumes which produce an illness rather like influenza. A few particles on the end of a cigarette can make you ill.

In some parts of the Division "Crossflon 20", a fluorocarbon anti-stick agent in the form of an aerosol spray, is used for spraying onto joint faces.

Care must be taken that the spray does not get on to tobacco as it will produce an illness rather like influenza when the tobacco is smoked. Never smoke or carry cigarettes or tobacco when the spray is being used and wash your hands thoroughly afterwards.

With these precautions the aerosol is safe to use in the open-air and in a well ventilated room.

52/9 SODIUM/POTASSIUM ALLOY

Sodium/potassium alloy should not be used, under any circumstances, for drying gases it is an extremely dangerous material.

Recently a very severe explosion occurred in a laboratory (not in ICI) when a technician was cleaning out a Dreschel bottle containing sodium/potassium mixture used for drying argon. Serious personal injuries and much damage to the laboratory resulted.

52/10 WHAT THE LAW SAYS NO. 10

The Highly Flammable Liquids and Liquefied Petroleum Gases Regulations 1972 come into force on 21 June 73. They state:—

- 6 (1) *Except where it is impracticable to do so every storeroom, cupboard, bin, tank and vessel used for storing highly flammable liquid shall be clearly and boldly marked "HIGHLY FLAMMABLE"*
- (2) *Where it is impracticable to mark any storeroom, cupboard, bin, tank or vessel in accordance with the foregoing paragraph of this regulation the words "HIGHLY FLAMMABLE LIQUID" shall be clearly and boldly displayed as near to it as possible.*
- 7 (4) *Except where it is impracticable to do so every tank, vessel, reservoir, cylinder and storeroom used for storing liquefied petroleum gas shall be clearly and boldly marked "HIGHLY FLAMMABLE — LPG" or otherwise to the like effect.*
- (5) *Where it is impracticable to mark any tank, vessel, reservoir, cylinder or storeroom in accordance with the last foregoing paragraph of this Regulation the words "HIGHLY FLAMMABLE — LPG" shall be clearly and boldly displayed as near to it as possible.*

Tanks containing petroleum spirit already have to be marked under the Petroleum Act. As stated in Newsletter 48, Item 3, "Flammable" is preferred to "Inflammable".

52/11 UNUSUAL ACCIDENTS NO.22

The wife of a member of the Division left her shopping on the front seat of her car with her glasses on top. It was a sunny day and the glasses acted as a burning lens and set fire to a polythene bag.

The dry powder extinguisher in her car came in useful.

Our Chief Fire Officer recommends a BCF extinguisher as the most suitable one for a car, preferably the 1½ lb. size. The extinguisher should be a model approved by the Fire Officers' Committee, with "FOC Approved" marked on it.

BCF extinguishers should be placed out of the direct rays of the sun or the BCF may leak out.

52/12 RECENT PUBLICATIONS

- (a) "Code of Practice on the Safety of Loads on Vehicles", available from HMSO, price 30p, describes the principles which should be followed when loading vehicles with a wide variety of goods.
- (b) A report from another organisation describes the fracture of a small high pressure vessel which occurred while it was still in store in its original packing crate. Bits were thrown over a wide area. The fracture was caused by stress corrosion cracking and the corrosive agent probably came from the breakdown of grease or machining fluid during heating.
- (c) A report from another organisation describes 15 incidents in which emergency power supplies failed to start and the reasons why. A figure for the reliability of diesel generators is derived.
- (d) Safety Note 73/10 contains advice for discussion leaders who are holding discussions, similar to those held in Organic House every Thursday morning, on the causes of accidents and the action necessary to prevent them happening again.
- (e) Safety Note 73/9 reviews the present state of the ventilation of the Division's compressor houses, recommendations made and progress in implementing them.
- (f) The new edition of ICI Engineering Codes and Regulations, Group C, Volume 1.5, Electrical Installations in Flammable Atmospheres has now been issued.

Some parts of the Code are of interest only to electrical and instrument engineers but the sections on Area Classification should be studied by all those concerned with plant design and operation.

Copies of the Code can be obtained from Standards Section, Engineering Department. A brief account of area classification appeared in Safety Newsletter No. 49.

For copies of (b) — (e) or for 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.

May 1973