DR. P.C. MERRIMAN

THE EFFECTS OF THE CONTROL OF INDUSTRIAL MAJOR ACCIDENT HAZARD REGULATIONS TO DATE

COMPANY/ORGANISATION: Chemical Industries Association.

PRESENT POST: Secretary to the Safety Advisory Group of the Chemical Industry Safety, Health and Environment Council.

ANTECEDENTS:

1. Qualified in Chemistry, London University.
2. Royal Air Force Education Branch, teaching Electronics.
3. Schoolmaster, teaching Chemistry.
4. Paper Industry: graduate recruitment and personnel work.
5. Chemical Industries Association.
   (a) 1971 - Executive Education and Training.
   (b) 1976 - Senior Executive Safety in CIA Directorate for Safety, Health and Environment.
6. Secretary to the Safety Advisory Group of the Chemical Industry Safety, Health and Environment Council (CISHEC). The aim of the Group is to enable the development of authoritative safety policies and strategies which can guide CISHEC in helping the Chemical Industry and in representing it externally in relation to Government, HSE, CBI, EEC and other bodies.

CLEVEPOL, HAZCHEM SYMPOSIUM 1986

CIMAH - IMPACT ON INDUSTRY TO DATE

BACKGROUND

Framework of current and developing U.K. Major Hazards Legislation CIMAH cannot be taken in isolation, must be seen in context of other measures;

e.g. Notification Sites/Marking Building Regs. NIHHS Regs.

Notification Sites/Marking Buildings Regulations will soon be adopted. UCO/DGO changes were implemented 1983 and, currently, the Housing & Planning Bill is proceeding through Parliament.

EXPERIENCE TO DATE

(a) **The Text of CIMAH**

This contained **no surprises** (thanks to H.S.E.'s scrupulous consultation process); the only last-minute insertion was of Reg. 15 regarding recovery of certain offsite emergency planning costs.

Apart from that, chemical industry was able to **welcome** the CIMAH Regulations as largely formalising well-established procedures (even if they did involve some bureaucracy) and, equally importantly, because they did **not go beyond** the requirement of the **Directive.**

(b) **The Technical Demands of CIMAH**

Convenient to divide Regulations into two sections i.e.:

(i) Regs. 1 - 4;
(ii) Regs. 7 - 12.

(i) Regs. 1 - 4 Experience is showing more or less what industry expected.

For U.K., therefore, H.S.E. state that these Regs. call for no more (even if no less!) than what has always hitherto been covered by the Health & Safety Act; they are very wide-ranging.

(ii) Regs. 7 - 12

(a) Identification of sites under these Regs.: in general no great problems; scope for discussion about the 'non-M-A-capability' criterion.

Effects:

Awareness of 'major hazards' (i.e. how much of what and where) and increased.

(c) Some older installations subjected to hazard studies/auditing.

(d) Considerable resources have been (and will continue to be) taken up on preparation of safety cases, derivation of realistic accident scenarios, etc.

(e) Some inventories have been reduced and the use of some substances avoided.

(f) Isolated/Process Storage distinction - not causing problems; no evidence of lesser standards of management though some people have expressed concern.

(c) The Organisational Effects

(i) CIMAH has required the further development of some company procedures to ensure a consistent and common approach to certain activities across companies as a whole e.g. in Hazard Studies.

(ii) More definitive policies may be necessary with regard to the experience, training, etc., necessary for staff on 'major hazard' installations.

(iii) Establishing clear level of management control of older plant.

(iv) On-site emergency procedures have been reviewed, exercises carried out, improvements made.

(d) The Social Effects

- Information to the LOCAL Public
- Information for off-site (County level) Emergency Planning.
- General public reaction.

In general, when CIMAH was first introduced, chemical industry was expecting that firms would find the technical aspects to be main immediate burden but this has not so far proved to be the case.

THE LOCAL PUBLIC

Possibly the aspect which has caused most concern for individual sites has been the implications of the requiremnt to inform the local public.

The problem is not the basic organisational aspect; so far most localities seem to be reaching amicable (and not too costly) agreements with their districts for distributing information.

There are some cases of problems with the shape and size of the area to be covered by local information. H.S.E. advises on this and is tending as to use the so-called 'consultation zones' used for planning purposes.

Also, where there is more than one CIMAH site in a locality, there have been cases of differing boundary lines. This problem over boundaries is more apparent than real; consultation distances are supposed to be just that.

Possibly the biggest worry for an industrialist is the case where a long-established, locally-accepted and accident-free site suddenly acquires the profile of a major accident hazard site.

COUNTY-LEVEL: OFFSITE EMERGENCY PLANNING

Experience so far suggests that, although there have been delays in completion in some areas, this aspect is progressing well.

Chemical industry was not expecting this to be a problem, because all chemical firms already had emergency plans for on-site accidents and those plans always included involvement of the local emergency services, police, etc.

Thus the new dimension of off-site aspects was relatively easy to tackle, greatly helped by the County EPOs, many of them expert members of the County Emergency Planning Officers' Society (CEPOS) and/or of the Society of Industrial Emergency Services Offices (SIESO).

However, these planning officers need properly-structured information on which to work and this is what the CIMAH Regs. require operators to provide. Operators carry out assessment of realistic accident scenarios and translate these into action advice. Some sites have brought in consultants and H.S.E. is always available to advise.

THE GENERAL PUBLIC

CIMAH has in its own way contributed to the general efforts by chemical industry to inform the general public as in the CHEMCOM series.

The part covered by CIMAH has meant that more information has been made available to employees and the general public about the nature of the 'major' consequences to which they might be exposed if things went severely wrong.

Discussions with employees, local authority and community representatives have been necessary to put over the message that the provision of the new information should not be taken to indicate that there has been any increase in risk.

Unfortunately, as previously mentioned, the press has highlighted the high hazards rather than the low risks.

(e) How do others see CIMAH?
How does Industry respond?

General

Some questions CIA has been asked about CIMAH:

1. Q. What is the cost of abiding by CIMAH Regulations?

   A. Largely administrative costs.

   Mostly nothing to do with intrinsic safety except as a check because safety is 'done all the time'.

2. Q. How much do firms do that goes beyond the legal requirements of CIMAH?

   A. Chemical firms do not sail close to the wind; legal requirements usually taken as the minimum - need to protect workforce and plant to stay in business!

3. Q. How much cost is involved in 'extending' the 'safety area' of a CIMAH site?

   A. One aspect of this is the creation of a 'cordon sanitaire' - cost could be nil or could be massive, depending on location.

4. Q. What about Small Inventory Top Tier Sites (SITTS) and those 'just below' CIMAH inventories?

   A. All sites are covered by Regs. 1 - 4 of CIMAH (apart from any other legislation such as NIHHS).

   H.S.E. attitude to SITTS is (with any eye to sensible deployment of resources) that they are NOT automatically exempted but that either:

   (a) they can make a non-Major Accident-capability case and are therefore exempt from Regs. 7-12; or

   (b) they have a very low Major Accident capability by virtue of small inventories.

HSC/HSE ATTITUDES

(i) Scope of CIMAH: although less in some ways than H.S.E. would have achieved originally, H.S.E. accepted need not to go beyond the Directive (the option is always open to do so if necessary). Part of this is the process/isolated storage distinction which H.S.E. would not have proposed.

(ii) Major Accident capability: H.S.E. accepts with some caution.

(iii) Quantitative Risk Analysis (QRA): H.S.E. inclines to this but

(f) The EEC Scene

U.K. is one of only two or three Member States which have specifically implemented the Directive in Regulations.

The Commission of the European Communities has passed to the Council proposals for a review of the major accident hazards directive. The directive provides for a review by January 1986; it is agreed that the time scale only allowed the correction of errors and inconsistencies.

This is a sensible interpretation of Art. 19 and the Draft Amending Directive is still the subject of such argument.

Implementation in the U.K. will mean amending CIMAH (not/via the Parliamentary process) and will occur some 18 months after the Amending Directive is adopted.

COLIN WAINWRIGHT

CHAIRMAN OF SESSION TWO

COMPANY/ORGANISATION: British Chemical Distributors and Traders Association

PRESENT POST: Director and Secretary

ANTECEDENTS:

Born 1938.

Mr. Wainwright has been involved with trade associations for over 20 years.

He started in the electrical and electronic industries and moved from there to the furniture industry.

In 1977 he was appointed Director of the British Chemical Distributors and Traders Association which looks after the interests of chemical traders, distributors and those who handle and move them within the U.K.

He is deeply involved with the day-to-day problems and legislation which affect the handling, movement and storage of chemicals on a national and international basis.

DR. H. SCHMIDTPOTT

EARLY WARNING SYSTEMS FOR TOXIC RELEASES

COMPANY/ORGANISATION: A.V.S. Products,
West Germany.

PRESENT POST: Products Manager.

ANTECEDENTS:

Born in 1949.

I started to study chemistry at the University of Gottingen in 1968 and finished with a Diploma thesis about organic electro-chemical synthesis in 1974.

The Dr.-Thesis was about Electro-chemical Kinetics in aquous solutions. It was performed at Max-Planck-Institute in Gottingen and completed in 1977.

After that I joined EG & G Princeton Applied Research Corporation as a Product Manager for electro-chemical instrumentation.

Since 1983 I am with Bayer Diagnostic & Electronic as a Product Manager responsible for toxic gas monitoring equipment.

INTERESTS:

My present interests are concentrated on selective electro-chemical sensors for the specific determination of toxic gases.

EARLY WARNING SYSTEMS FOR TOXIC RELEASES

BY: DR.H.SCHMIDTPOTT
Bayer Diagnostic + Electronic GmbH

Safety has been of major concern from the very beginning of chemical process industry in the late 1800's.

Today the safety standards of the chemical industry are outstanding and they are probably the strictest rules compared with other industries.

Despite all the precautions taken when engineering a plant or under operation there still is a residual risk of hazardous substances escaping into the environment.

HAZARDOUS MATERIAL PROBLEM

* Releases associated with
  - manufacture
  - transportation
  - storage

* Chemical hazard occurs in
  - spills
  - leaks
  - fires
  - accidents

Especially after Bhopal the chemical industry is in a rush to improve existing emergency - response networks and backup systems.

In order to take the right decisions in a timely manner we do need factual information first.

INFORMATION REQUIRED FOR EMERGENCY RESPONSE

Information critical to good decisions
- identity of material
- location
- prediction of downwind hazard

The device which generates the required information is the early warning system for Toxic or Hazardous materials. This device should have the following characteristics.

DESIRED CHARACTERISTICS OF REMOTE DETECTION SYSTEM

* Map of area of hazard
* Pinpoint source
* Identify material
* Estimate leak rate
* Serve as alarm
* 24 hour/day operation
* High reliability
* Minimum maintenance
* Minimum cost.

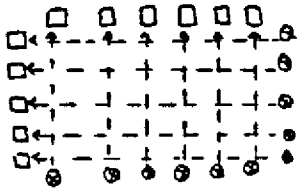
Basically there are two detection principles available to fulfill the task.

1) Monitors that do not have to come in contact with the target material.

2) Sensors which require a direct contact with hazardous material.

Typical instruments for the first group are devices based on laser adsorption, lazer induced Ramam scattering, infra red or U.V. adsorption.

The installation is mostly performed in a way that the light beams will form some kind of matrix above a plant.



x light beam source

□ detector

There are also new devices under development which will scan a certain area, so the number of source - detector couples can be decreased.

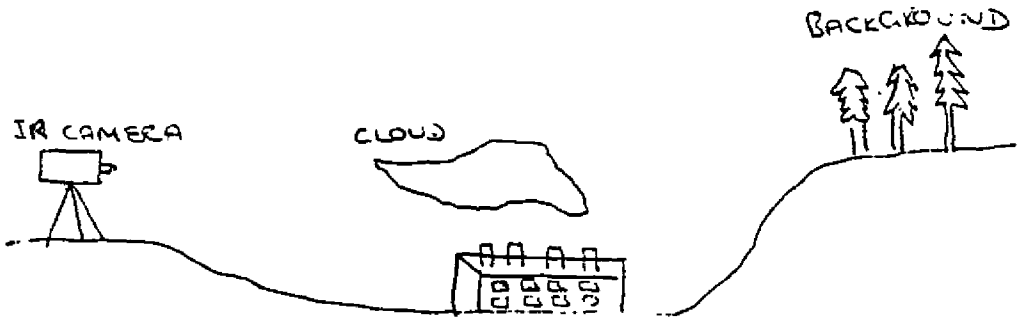
By means of computerised tracking systems which utilize additional meterological data such networks can provide information as to how fast and in which direction a cloud is moving.

The major drawback of such a perimeter monitoring system is the price.

A more economical way might be the infra red imaging system developed at Stamford Research Institute.

The device is based on an array detector camera with 180 Elements.

RADIATING AND ABSORBING COMPONENTS VIEWED BY IR CAMERA



* Background (building,pipes,terrain,sky, clouds) Radiates

* Gas cloud radiates and adsorbs.

Although a lot of effort has been put into making remote fence line monitors selective all mentioned systems are sensitive to weather changes and they don't automatically know, what gas has been released where it came from what is its concentration and quantity.

This information can only be provided by a warning system based on elective sensors.

Out of the selective sensors the electrochemical sensor should be preferred to semiconductors since the chemical sensor shows higher selectivity, appropriate response behaviour and most important does not loose sensitivity if not exposed to the target gas.

A typical system consists of a sensor head which is installed in the area, where the specific gas might occur. This will exclude any falso alarms from other non hazardous substances

In order to guarantee fail safe operation the head is equipped with an automatic test routine this checking every 24 hours whether the device is still in operation.

The information coming from the sensor head is going via a two-wire connection to a central control module

On the control module there are recorder outputs for data logging, alarm relays and bar graph indicators.

Generally the last protection is to avoid gas leaks completely. Sincethis is a very theoretical approach the second choice is to install early warning systems based on selective sensors in direct vicinity of the probable risk.

Remote sensors in their current state of technology can be used only as non specific fence line monitors.

W.D.C. COONEY, O.B.E., MIFireE.

THE PROBLEMS OF SPONTANEOUS COMBUSTION IN BULK STORAGE AND THE MARKING OF BUILDINGS

COMPANY/ORGANISATION: Cleveland County Council

PRESENT POST: County Fire Officer

ANTECEDENTS:

Mr. Cooney joined the Fire Service in 1963 at Kirkcaldy in Fife.

Served as a Fireman and rose through the ranks in Scotland until he was appointed Deputy County Fire Officer in Cleveland in 1977.

He was appointed to his present post in 1979.

He is Secretary of the North East District of the Chief and Assistant Chief Fire Officers Association, Chairman of the Chemdata Working Party and is an adviser for the Association of County Councils on the Advisory Committee on Dangerous Substances.

He is a married man with two daughters

INTERESTS:

Golf, walking and squash.

THE PROBLEMS OF SPONTANEOUS COMBUSTION IN BULK STORAGE

INTRODUCTION

This is a subject that has involved the minds of some very eminent people throughout the world in attempting to find the reasons and the causes of spontaneous combustion.

If you look at the words individually in the Oxford Dictionary, the word 'SPONTANEOUS' is defined as "acting, done, occurring, without external cause; voluntary, without external incitement, involuntary, not due to conscious volition; growing naturally without cultivation; instinctive, automatic, prompted by no motive."

The word 'COMBUSTION', however, is defined as follows, "ignition of mineral or vegetable substance (e.g. heap of rags soaked in oil, amounts of wet coal), from heat engendered by rapid oxydisation."

These definitions, however, leave a great deal to be desired. You will see from the great pile of documentation on the table beside me that the question of spontaneous combustion has been discussed in considerable detail by a large number of people, over a long period of time. Not being of the learned fraternity but a simple fire officer, I take the following definition to apply to spontaneous combustion:

"Certain materials, especially organic materials, based on carbon, may react with oxygen at room temperature. Such a reaction, if the material in question is a good insulator, will generate heat if the heat produced cannot easily dissipate and, as such, the temperature rises and such a rise increases the rate of reaction and the situation escalates, ignition temperature is then reached and the true combustion stage commences."

Spontaneous combustion is as a result of substances combining with atmospheric oxygen. All substances capable of combining with oxygen will at some critical temperature, oxidise when exposed to air. This oxidisation results in the evolution of heat. The rate of oxidisation at normal temperature is normally so slow that no appreciable increase in temperature is apparent.

For example, oxidisation in the form of rusting of metallic substances in the air, e.g. iron, occurs without any noticeable increase in temperature or the oxidisation of aluminium to obtain the white oxide that is found on the surface of aluminium plates does not result in a great deal of temperature increase.

The likelihood of spontaneous combustion may be affected by a wide variety of chemical and physical mechanisms. It is extremely difficult in the main to determine the precise mechanism or factors involved in a particular instance.

Irrespective of the mechanism involved, the process by which materials increase in temperature by self generation of heat, that is they draw heat from their surroundings, results in spontaneous ignition, sometimes erroneously called sponteneous combustion.

There are, however, three general conditions which affect the area that may be involved in spontaneous ignition:

1. The rate at which heat is generated by the fuel.

2. The air or oxygen supply available at the time of heat generation.

3. The rate at which heat is lost to the surrounding area.

Let us look at these three areas in some detail.

1. HEAT GENERATION

As mentioned earlier in respect of the oxidisation of metals, this type of oxidisation occurs so slowly that heat generation is negligible or at least at a rate that the heat can be easily dissipated within the atmosphere. However, when the rate of heat generation is in excess of the method of dissipation, then that heat build up in the material may be such that spontaneous ignition can occur.

2. OXYGEN SUPPLY

Adequate oxygen must be present to allow spontaneous ignition to take place. However, it must be understood that oxygen does not need to be available in the form of free oxygen as found in air. Certain forms of spontaneous ignition may, by the reaction of products, create in that chemical

reaction sufficient oxygen to allow the heating process to continue and to liberate sufficient oxygen to allow the reaction to reach spontaneous ignition stage.

3. HEAT LOSS

The heat produced during such spontaneous ignition could be dissipated into the surroundings which would result in nothing more than a slightly increased temperature within the product or fuel concerned. However, when heat accumulates faster than it can be dissipated, spontaneous ignition is then inevitable and possible.

OTHER POSSIBLE CAUSES

Spontaneous ignition can also occur due to mechanisms other than that described above. Those mechanisms may include 'CHEMICAL REACTIONS' with the combining of two or more materials or, in a great deal of cases, 'BIOLOGICAL ACTIVITY'. The process of drying materials or even gathering materials in a state which contains large amounts of moisture. It can be seen, therefore, that it is not possible to predict precisely when spontaneous ignition will occur.

However, it is possible to describe the fuel, chemical and physical mechanisms that are involved and it is also possible to list those materials which, through experience, have shown themselves to be capable of spontaneous ignition.

CHEMICAL AND PHYSICAL MECHANISMS

CHEMICAL REACTIONS

There are a considerable number of substances which, by their normal make-up, are not combustible but may cause ignition of combustible materials due to heat generation. One example is calcium oxide (unslaked lime). If this material is wetted, then considerable amounts of heat are generated, any combustible materials of a carbonacious nature stored alongside will ignite.

Certain materials, if exposed to air, will spontaneously ignite either because they oxidise so rapidly in air or because they have low ignition temperatures. However, these materials are not normally stored in bulk in large areas (e.g. phosphorus - white (or yellow)).

SPONTANEOUS HEATING

You will note from my previous comments that I have tended to talk about the internal generation of heat within the material itself. However, if the building is set alight, we can also rightly put down the cause of fire as spontaneous ignition. Unlike the fires mentioned above, where the heating occurs from within the material, clearly there could be a serious hazard since certain materials that are apparently securely stored away from the source of ignition can become extensively involved in a fire that is very difficult to extinguish.

Let us take, for example, a pile of rags that had been used for cleaning materials where painting and paint products have been

involved. If those paint rags for example are stored in a closed metal container, then the degeneration and exacerbation of the materials in use, together with the carbonacious material of the rag, will generate and create a large heat release, providing they are contained in a closed metal container then the chances of ignition are very small. However, should they be allowed an adequate oxygen supply, i.e. the possibility of ventilation holes in the container, then they will ignite and continue to burn until totally consumed.

Fortunately, the behaviour of materials that are capable of spontaneous heating are sufficiently well known for precautions to be taken to ensure that the storage of such materials is undertaken in a proper manner and that adequate ventilation is present to allow that heat dispersion to take place.

Having mentioned these phenomenons, spontaneous ignition can continue even if those conditions are followed.

The types of material that cause particular problems with regard to spontaneous ignition are listed in Appendix I.

STORAGE AND MANAGEMENT

The storage and management of bulk materials requires to be very precise. Materials that appear to be incombustible may well have a dust explosion hazard involved within them, providing the ignition source is such as to raise the materials to ignition temperature. However, the bulk storage by organic materials always presents a considerable problem of spontaneous ignition, especially

those materials stored when damaged or may have inherent oil or oil materials built within their vegetable origin. There is need for constant supervision, constant temperature checking of the stacks and any doubt that may arise in the temperature of a stack be it of petroleum oil products, farm products in the form of grain, wheat, etc., or even in products such as coal stacks. There may be a case for dismantling the stacks to allow better air circulation and greater heat dissipation.

There is a very simple cause of spontaneous ignition that totally destroyed a business that was being happily conducted in an area of the U.K. Whilst it does not represent the area that I am talking about today, it does however highlight the problem. You will see from my paper a small strip cartoon that highlights the problem in respect of spontaneous ignition. You may think that the point in question is rather naive. However, the strip cartoon points out the problems related to a small cafe that did not carry out and undertake the proper precautions when storing materials in bulk which were impregnated with an organic material.

Consider the same problem when you are thinking of storing many tonnes of material that falls within the list given in Appendix I and then simply relate back to the small strip cartoon in Appendix II that totally destroyed one business premise from a little simple lack of foresight.

Finally, let me point out that we are all subject to spontaneous combustion. It has been known for some time and there is considerable scientific evidence/contradiction about the fact, that the human body could also be the subject to spontaneous combustion.

This, however, differs from the ordinary combustion as we know it in two ways.

1. The spontaneous ignition of the human body appears to begin internally, burning outwards, until most or all of the body is reduced to ash, though sometimes an extremity (e.g. a hand or foot) remain untouched.

2. Yet surprisingly little damage is done in the immediate vicinity, curtains and furniture, etc., may be covered with a geasy deposit but they do not burn.

The classic description of a case of human combustion of this kind is the death of a person in Bleak House, by Charles Dickens.

Dozens of case histories had been investigated on the subject in some detail (Michael Harrison's book 'Fire From Heaven'). It would appear that when the remains of bodies consumed in fire burned to ash with no apparent fire around them, the explanation has been that spontaneous ignition has occurred within the body.

It would seem as though the human body generates within itself certain conbustible gases and, as such, is subject to possible ignition. The phenomenon of spontaneous human ignition has been regarded through the years as consumption of the body and bones to such an extent that only a fine ash was left and that the extremities of the body were left intact but no external source of ignition was apparent. It is an agreed term, however, that spontaneous ignition in the case of a human being is misleading and there must be surely

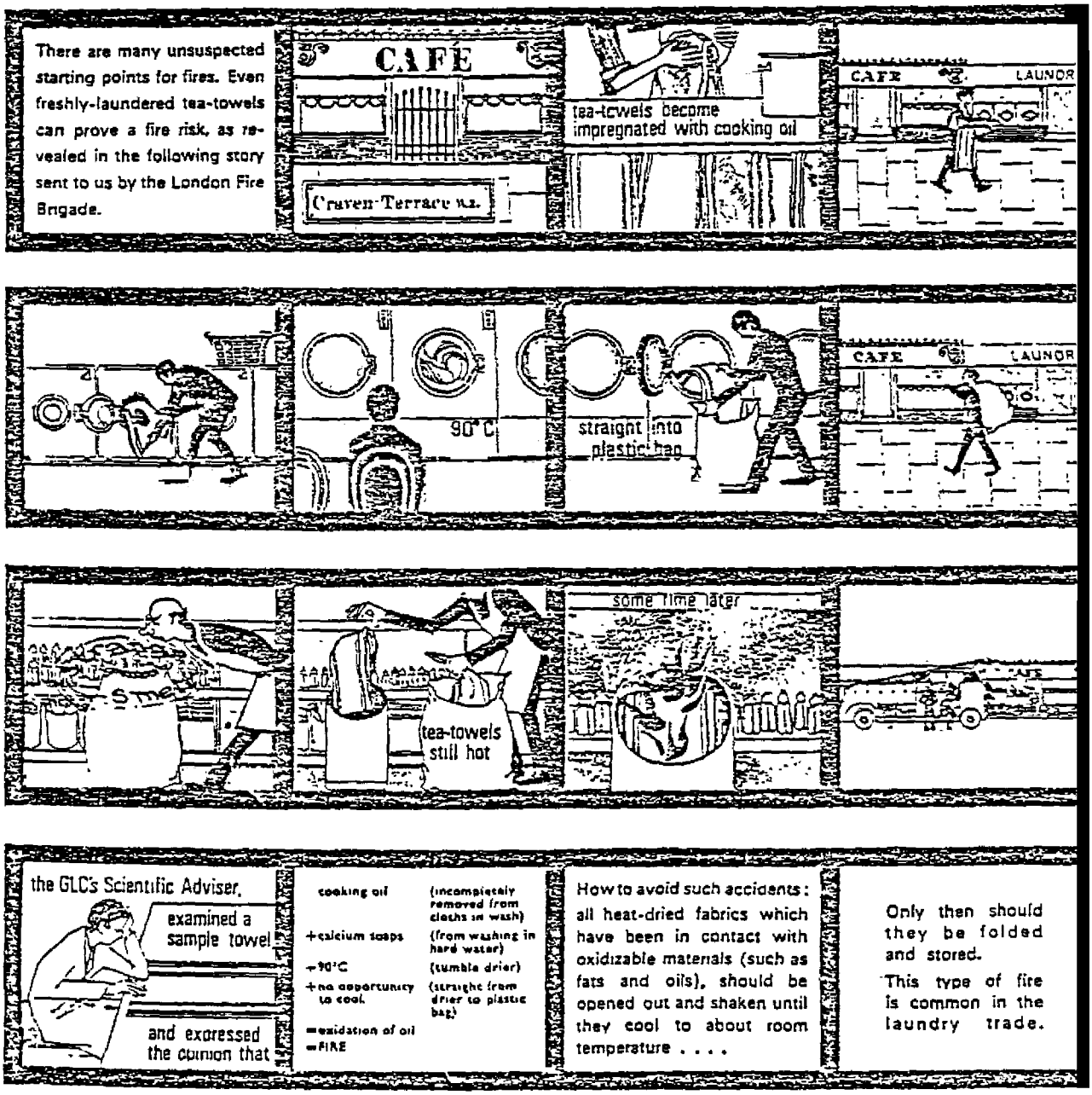
some medical reason for the case in question. However true and prudent that they can be explained by the victim lighting a match or even falling into a fireplace is, to say the least, being simply unscientific.

W.D.C. COONEY, OBE, MIFireE,
COUNTY FIRE OFFICER,
CLEVELAND COUNTY FIRE BRIGADE.

MAY, 1986

Alfalfa Meal
Asphalt-impregnated Sheathing
Ammonia
Barium Oxide
Beans
Brewers' Grains, spent
Castor Oil
Charcoal
Coal, Bituminous or Lignitic
Cod Liver Oil
Corn Meal
Corn Oil
Cotton
Cottonseed Oil
Distillers' Dried Grains
Feeds, various, ground
Fertilizers
Fish Meal
Fish Oil
Flax
Foam Rubber (in consumer products)
Grains, various
Grass
Hay
Hemp, with oil
Iron Filings, with oil
Iron Pyrites
Jute, with oil
Lard Oil
Lime, unslaked
Linseed Oil
Lithium
Lithium Hydride
Manure
Menhaden Oil
Monomers, for polymerization
Neat's-foot Oil
Oleic Acid
Oleo Oil
Oiled Fabrics, animal & vegetable oil
Olive Oil
Paint, with drying oil
Palm Kernels
Palm Oil
Peanut Oil
Perilla Oil
Phosphorus
Pine Oil, Pitch, Resin
Pine Tar, Tar Oil
Potassium
Rape Seed Oil
Rice Bran
Roofing Felts and Paper
Rosin Gum, Oil
Sawdust
Sisal, with oil
Sodium
Sodium Peroxide
Soybean Oil
Sperm Oil
Stearic Acid
Straw
Tallow
Tallow Oil
Tung Nut Meals
Tung Oil
Turpentine
Varnished Fabrics
Waste Paper
Whale Oil
Wool Waste, with oil
Zinc, powdered
Zirconium, powdered

Spontaneous ignition of newly-washed tea-towels



MARKING OF BUILDINGS

INTRODUCTION

The Health and Safety Commission published a Consultative Document headed 'DANGEROUS SUBSTANCES (NOTIFICATION AND MARKING OF SITES) REGULATIONS'. This Consultative Document came about as a result of initiatives taken by a number of Local Authority Fire Brigades who saw a need to introduce a system of marking places containing dangerous substances.

The information was felt to be extremely useful to Fire Brigade personnel on their arrival at the scene of a fire or incident. The power to undertake such marking schemes for the purpose mentioned above was usually evident in Local Acts that appertained only to that Local Authority area.

Because of these local initiatives, the Central Fire Brigades Advisory Council's Joint Committee on Fire Brigade Operations (JCFBO) carried out a study to test the practical use of the Hazchem Coding Scheme in static situations in order to warn Fire Brigade personnel about the presence of dangerous substances.

PILOT STUDY

Members will recall, however, that the original Hazchem Codes were developed for use on hazard warning panels to be affixed to road vehicles carrying dangerous substances in bulk. The JCFBO study was limited in its application to four Fire Authorities using a

restricted range of Hazchem Codes (now known as Emergency Action Codes) on a limited group of sites. Following the study, there were considerable differences of opinion amongst the participating Authorities on:

(a) the use of the codes;

(b) the need for a marking scheme;

(c) the feasibility of such a marking scheme being current.

However, the general concensus of opinion was that there was indeed a need to undertake a serious study and to consider the marking of such sites. The Health and Safety Commission therefcre decided in 1984 that a simple scheme for the Notification and Marking of Sites Containing Dangerous Substances should be proposed.

GENERAL PRINCIPLES

The general principles outlined in the Consultative Document stated that dangerous substances stored, handled or used at work create risks to the health and safety of persons at the workplace or in the vicinity. Persons dealing with fires or other incidents involving dangerous substances are particularly exposed to such risks.

It is important that Fire Authorities responsible for attaining information for fire fighting purposes be made aware of the location of such sites where dangerous substances are present and that

adequate warnings of the presence of dangerous substances are given to members of the Emergency Services when they attend incidents at such sites.

The Draft Regulations and Code of Practice have laid down certain criteria in order to assist in the marking of these sites. The criteria are as follows:

A. THE REQUIREMENTS

The Draft Regulations will apply to ALL sites in Great Britain where a total quantity of 25 tonnes or more of dangerous substances is, or is liable to be, present. The definition of a site is that already laid down in the Notification of Installations Handling Hazardous Substances Regulations 1982 (NIHHS). Also, the definition of a dangerous substance is consistent with the Classification, Packaging and Labelling of Dangerous Substances Regulations 1984 (CPL Regs). Further information with regard to classification is found in the approved list which is read in conjunction with the CPL Regs.

B. NOTIFICATION

The Draft Regulations laid down that it shall be the duty of the persons undertaking the activity at a site to notify the Health and Safety Executive. The reason for placing the duty in this way is to achieve consistency with the notification system established under the NIHHS Regs. Notification would normally only be required on a once only basis, unless significant changes in the practices undertaken took place.

C. MARKING

Draft Regulation 5 states that there is a duty to place warning signs at sites where a total quantity of 25 tonnes or more of dangerous substances is, or is liable to be, present. The responsibility of placing the sign under Regulation 5 falls on the person undertaking the activity at the site. The intention of the marking requirements as presently drafted is to ensure the placing of signs to warn Fire Brigade personnel arriving at the site of the presence, or possible presence, of dangerous substances. The Guidance Note with respect to the marking gives a number of options. The options are:

(1) Signs should be placed only at entrances normally used by the Emergency Services, rather than at all normal points of access.

(2) The placing of signs at all normal points of access should be extended to walls of buildings facing streets.

(3) The placing of signs on any site should be subjected to consultation with the Local Fire Authority.

(4) Either in addition to, or instead of, the current proposals, signs should be placed on any separate building, structure or open storage area containing dangerous substances at a site.

Those options are all inter-connected. My personal preference is option number (3) so that adequate consultation takes place with the Local Authority Fire Brigade before any signs are placed, to ensure that there is no conflict after signs have been placed.

TYPE OF SIGNS REQUIRED

The type of sign required to be displayed is covered by Regulation 5, Schedule 1, which lays out various types of sign that should be displayed if the characteristic properties of the substance stored resemble that as outlined in Schedule 1. However, the Guidance Note also gives a number of options with regard to the types of signs to be displayed. These options are divided into two main categories:

(a) The marking of access points.

(b) The marking of buildings or locations.

The options set out under (a) are:

(1) A blank triangular sign should be place at access points with full signs as proposed in the Regulations at individual locations of dangerous substances within sites.

(2) The signs proposed in the Draft Regulations should contain pictogrammes only, rather than pictogrammes and supplementary text.

My preference in respect of this particular option should be that a blank triangular sign be placed at access points with the full sign as proposed in the Regulations at individual locations of dangerous substances within the site. I would further add, however, that the placing of these signs should only take place following discussions with Local Authority Fire Brigades.

The question of placing full signs on the actual locations has been discussed in the Draft Guidance and it is suggested that modified Emergency Action Codes could be used along with the pictogrammes outlined in Schedule 1. As I have stated earlier in this paper, I am against the use of the Emergency Action Code, as it was primarily designed for road transport. However, I would not be against the use of pictogrammes outlined in the schedule attached to the Draft Regulations.

LOCAL ACTS

You will see from my early comments that a number of Local Authorities had Local Acts which allowed them to undertake marking schemes within their own area.

One area which has a marking scheme is the area covered by the G.L.C. It is suggested in the Draft Regulations that all of the Local Authority powers for the Marking of Sites within their area should be repealed, with the exception of the G.L.C. Marking Scheme, which it is suggested should be exempt.

Personally, I am totally opposed to this exemption. Whilst I fully appreciate the problems with regard to the repeal of the General Powers Act of the G.L.C. I feel that we have been striving for years to introduce nationally accepted Marking Schemes in respect of Packaged Goods (CPL Regs.), Bulk Loads (Tanker and Tank Container Regs.) and even the Transportation of Dangerous Substances in Packages.

It would seem as though, because problems may arise in the repealing of such legislation that appertains to the G.L.C., we should offer an exemption.

My reasons for pursuing a national scheme is to ensure that, irrespective of which part of the country you work as an operational fire fighter, the method of marking sites is common and I would be strongly opposed to any exemption being given to any area of the country.

W.D.C. COONEY, O.B.E., MIFireE.,
COUNTY FIRE OFFICER,
CLEVELAND COUNTY FIRE BRIGADE

MAY, 1986

REFERENCE

H.S.C. Consultative Document
Dangerous Substances
(Notification and Marking of Sites)
Regulations and Guidance Note

R.P. BONEHAM, ESQ.

CHAIRMAN OF SESSION THREE

COMPANY/ORGANISATION: Hoyer (U.K.) Limited.

PRESENT POST: Projects Manager.

ANTECEDENTS:

Born and educated in Coventry in the West Midlands.

Read Business Studies at Bradford University and then went on to work for Albright & Wilson Limited for eight and a half years in a variety of posts concerned with chemical distribution and sales administration. Subsequently moved to the short sea container shipping company, Bell Lines for a further eight years managing their tank container business. During this time became a founder member and secretary of the Association of Tank Container Operators.

Recently joined the largest bulk transport group in Western Europe, Hoyer, working for their U.K. subsidiary where he is involved in advising on hazardous goods transport legislative matters, National and International, as well as playing an important role in the marketing department.

Currently involved in setting up a Hoyer Company in Ireland, also a founder and first Chairman of the Kirklees Hazardous Substances Liaison Committee.

INTERESTS:

Cycling, ornithology and classical music.

MR. F.H. SMITH, B.A.

THE ENFORCEMENT OF DANGEROUS GOODS CONVEYANCE REGULATIONS: A CORPORATE APPROACH

COMPANY/ORGANISATION: Cleveland Constabulary.

PRESENT POSITION: Assistant Chief Constable (Operations).

ANTECEDENTS:

Mr. Smith joined the City of Glasgow Police and served there and at Strathclyde. He transferred to Greater Manchester Police where he was promoted to Chief Superintendent. He transferred to Cleveland Constabulary in 1982 to his present post of Assistant Chief Constable.

He serves on the Association of Chief Police Officers' Traffic Committee, with special responsibility for hazardous substances. He also represents the Association on various Committees, including the Chemical Industries Association, Chemsafe Committee and the British Agro Chemicals Association.

THE ENFORCEMENT OF DANGEROUS GOODS CONVEYANCE REGULATIONS - A CORPORATE APPROACH

1. INTRODUCTION

1.1 In the latter part of 1986 or early in 1987 the Police will be removed from a direct, and I emphasise 'direct' role in enforcing the Conveyance of Dangerous Substances by Road Regulations.

1.2 Negotiations have been ongoing to bring about this change since 1982. At this time the Association of Chief Police Officers became aware of the difficulties associated with enforcing the Dangerous Substances (Conveyance by Road in Road Tankers and Tank Containers) Regulations of 1981. (The Tanker Regulations). This set of Regulations, the first of many, presented the Police with problems, to which no immediate answer could be given.

1.3 There has been concern expressed from certain areas, that this change of policy is frivolous, has not been given sufficient thought and the removal of the Police as the Enforcement Authority, will lead to an increase in numbers offending against the Regulations, increasing the numbers of incidents.

1.4 I can assure you that this is not the case and in an attempt to remove any uncertainty I will deal with:

(a) The historical perspective.

(b) The reasons for the change - identification of the problems.

(c) The future role of the Police - the Corporate Approach.

(d) Future training requirements.

2.(a) HISTORICAL PERSPECTIVE

2.1 Legislation covering the conveyance of dangerous substances is not new, it has been with us for about 100 years. The Petroleum Consolidation Act of 1928 of course was the major enactment of any significance which consolidated, all earlier legislation.

2.2 However, much fragmented legislation was introduced between 1928 and the 1970's controlling not only the conveyance of petroleum spirit, but all manner of dangerous substances.

2.3 Until this time, Police involvement was very small and Police powers extremely limited.

2.4 The petro-chemical and plastics industry and its associated industries, grew up rapidly in the 1960's here in Cleveland County in particular. With the increased output in the chemical industry came extra activity in transportation and its associated problems. The need for further control over the conveyance of chemical substances became a priority.

2.5 In the early 1970's the Teesside Transport Liaison Panel was formed and introduced the Hazchem Labelling Scheme, on a voluntary basis, in Cleveland. It proved very successful and was promoted nationwide through the medium of this and other symposia and through the ACPO Traffic Committee (England, Wales and Northern Ireland). (E.W. & N.I.)

2.6 In 1978 as a direct result of incidents which occurred in the British Isles and following public disquiet after the Spanish Holiday Camp disaster, the Hazchem marking scheme was made law in the shape of the Hazardous Substances (Labelling of Road Tankers) Regulations, 1978 (which of course have now been repealed).

2.7 During that period and in all draft versions leading up to the inception of the Labelling Regulations it was thought that enforcement would be the responsibility of the Police AND the Department of Transport. However, this did not materialise and the Police became solely responsible for enforcement.

2.8 At the time this caused no problems. The Labelling Regulations were easily enforced by Police Officers and training was simple.

2.9 The Dangerous Substances (Conveyance by Road in Road Tankers and Tank Containers) Regulations, 1981, replaced the Labelling Regulations and continued to allocate on-road enforcement exclusively to the Police. These Regulations were much more involved and included several technical sections.

2.10 The United Kingdom Police Forces soon realised that there were inherent dangers in the 'sole enforcement' role.

2.11 In order to examine and discuss problems encountered during enforcement the Health and Safety Executive and the Police formed the HE/POL Committee. Within this Committee the Police Representatives began to explain their concern.

3.(b) PROBLEMS

3.1 The main reason for this opposition by the Police was the identification of certain areas in the Health and Safety at Work etc. Act, 1974, (H.S.W. Act) and the Tanker Regulations which appeared to impose conditions beyond the capabilities and responsibilities of the Police.

(i) Section 19 H.S.W. Act,. 1974 which required the appointment of Police Officers as 'Inspectors' in order that the Regulations made under this Act could be enforced. These Officers, once appointed, were given the powers of 'Factory Inspectors' and had to be qualified to enforce such technical aspects as

Regulations 6 and 7 of the Tanker Regulations (Design, Construction, Maintenance and Certification of Tankers and Tank Containers).

(ii) Sections 3 and 7 H.S.W. Act, 1974 which required Chief Constables to ensure these appointees were not exposed to risks and the appointees, in turn, did not expose themselves or others to dangers by their acts or omissions, whilst carrying out complicated and dangerous tasks.

(iii) Sections 21 and 22 H.S.W. Act, 1974 - These Sections give appointed 'Inspectors' the power to serve Improvement and Prohibition Notices. An entirely new concept of enforcement in Police terms.

(iv) Proof of Contents - The question of whether the Courts would require sampling and analysis of the substances being carried to prove that they were dangerous substances as defined.

(v) On-site Enforcement - Many infringements would be committed by operators and drivers prior to leaving the premises and once identified on the road, could only be proved by prolonged investigation.

Let me deal with these points in a little more detail.

3.2 (i) **Section 19 Health and Safety at Work Act, 1974 (Suitable Qualifications)**

This section states "Every enforcing authority (in the case of the Tanker Regs. - the Chief Officer of Police) may appoint as "Inspectors" such persons having SUITABLE QUALIFICATIONS as it thinks necessary for carrying into effect the relevant provisions within his field of responsibility....." This placed responsibility on the Chief Officers of Police to appoint from their ranks Officers who were suitably qualified to

enforce the whole of the Tanker Regulations and those Regulations which were to be enacted in the due course of time, for example:

(a) design and construction of tankers;

(b) compatibility of chemicals in mixed loads;

(c) whether driver training was adequate;

(d) classification of chemicals and of explosives;

(e) loading and unloading of explosives at the stores;

(f) packing and segregating of explosives;

(g) the whole of the Ionising Radiation Regulations.

Advice was sought on this point through the Policy Branch of the Health and Safety Executive who stated that the requirement for "SUITABLE QUALIFICATIONS" was to "attend a course of instruction". This caused somewhat of a dilemma:-

FIRSTLY - Regulation 6 and 7 of the Tanker Regulations - Construction, Design and Maintenance of Tankers and Tank Containers and their Testing, Examination and Certification - is a very specialised field.

SECONDLY - Regulations 6 and 7 were outside any usual course of instruction on Police Motor Patrol Officer's courses which deal essentially with Motor Vehicles Construction and Use Regulations.

THIRDLY - it followed that extensive and involved training would be needed which was cost prohibitive.

FOURTHLY - no one within the Service could be readily identified as being competent to give instruction to the required level on these technical aspects.

Therefore "suitable qualifications" were not so easily obtained by Police Officers.

The H.S.E. Inspectorate appointed under the same Section (Section 19 H.S.W. Act), to carry out similar tasks 'on-site' as those being asked of Police Officers on the road, are likely to have suitable qualification (e.g. a degree in Chemical or Mechanical Engineering), prior to being employed in that capacity or are trained over a period of time to gain those qualifications.

To make some progress Cleveland Police ran a series of courses open to Officers throughout the Country to prepare them to some extent for this new role. Included in the itinerary were sessions on Regulations 6 and 7 (construction, design and maintenance) but, this in no way fulfilled the requirements of Section 19 of the Health and Safety at Work Act (obtaining 'suitable qualifications'). The instruction was, and still is, a mere profile of the construction of tankers and tank containers.

Officers were being asked to put themselves into danger and examine tankers and equipment (valves, man-lids, relief valves for example), to identify faults in design and maintenance with sufficient expertise to prove misdemeanours to the satisfaction of the Courts following a maximum of 3 - 4 hours classroom instruction.

I'm sure you will agree that danger can be caused by an enthusiastic amateur, not only to himself, but to others.

3.3 (ii) <u>Section 3 Health & Safety at Work Act, 1974</u>

Section 3 places a duty on an employer to conduct his undertaking in a way "TO ENSURE PERSONS IN HIS

Section 7 of the Health and Safety at Work Act, 1974

Section 7 places a duty on employees to TAKE CARE OF THE HEALTH AND SAFETY OF HIMSELF AND OTHER PERSONS WHO MAY BE AFFECTED BY HIS ACTS OR OMISSIONS. (Although the Police Service is not governed by the Health and Safety at Work Act it must conform to the spirit of the Act.)

Without doubt concern about the safety of Officers and the duties placed on Chief Constables and their employees by Sections 3 and 7 of the Health and Safety at Work Act was well founded. Incidents in different parts of the Country during the past two or three years involving dangerous substances where Police Officers have been injured have highlighted the danger and the need for extensive training in order to reduce the risk of injury and damage to health not only to themselves but to members of the public.

3.4(iii) PROHIBITION AND IMPROVEMENT NOTICES

The enforcement was also complicated by the availability for the first time to the Police of Improvement and Prohibition Notices. This was a new concept to the Police as they are used as an alternative to prosecution. This new power caused some disquiet both to the Police and the Factory Inspectorate. The HSE were concerned that should too many of these notices be served by the Police it would bring the notice system into disrepute thereby cancelling their effectiveness in on-site situations. The Police were concerned because once issued a Police Officer could have to defend his actions at Tribunal under the Appeal Procedure. Further examination of these procedures showed that the prohibition notices were of little use to Police in an on-road situation and that improvement notices had limited use. The notices, in my opinion, are only suitable for use by an agency which has responsibility for overall enforcement and inspection, i.e. on the road AND at the operator's premises.

3.5(iv) PROOF OF CONTENTS OF TANKERS AND TANK CONTAINERS

Concern was expressed during this period regarding how the Court would accept Police Officers' evidence over the contents of tankers or tank containers without providing actual evidence of fact of what was contained therein was sampling and analysis required. A great deal of advice was issued on this matter and to date Courts have accepted the production of documentation and Police evidence, albeit in some cases reluctantly, for proof of contents. It does not, however, mean that this will continue in the future. There are cases where analysis of chemicals carried, is a necessity, to prove that an offence has been committed. A case in Cleveland where a reaction had occurred inside a tanker in transit causing an emergency evacuation of the population, took months of detailed analysis by H.S.E. chemists, to prove a misdemeanour on-site, prior to loading.

3.6(v) ON-SITE ENFORCEMENT

Certain parts of the Tanker Regulations can be best enforced at source as they were an on-site activity rather than a roadside activity.

(i) Regulations 6 and 7 - Testing and Examination and Construction and Design and Maintenance of Tankers and Tank Containers.

(ii) Regulation 8 - Information relating to dangerous substances to be obtained by the operator.

(iii) Regulation 9 - Limitation on the conveyance of certain substances.

(iv) Regulation 12 - Prohibition against overfilling.

(v) Regulation 13 - Instruction for training a driver.

Contraventions of these Regulations could only be proved by visiting the premises of the operator involved which could be at the other end of the Country from where the tanker was examined on the road.

4. THE CURRENT POSITION

4.1 We knew the problems but what were our options for resolving them?

It was suggested at the HE/POL Committee that the simpler aspects of the Tanker Regulations such as documentation, labelling and parking could be easily undertaken with the minimum of training and in absolute safety - in other words by the Police. It was further suggested that the more technical matters should be enforced by the much better qualified Factory Inspectorate or Department of Transport Examiners. A DUAL ENFORCEMENT ROLE WAS SUGGESTED.

4.2 This option was discarded and it was decided that in terms of Section 18 of the Health and Safety at Work Act, there could be only one enforcement agency nominated in any Regulations made under the Health and Safety at Work Act.

4.3 Furthermore, the Department of Transport and the Factory Inspectorate surprisingly stated that they did not have the resources to assist the Police in on-road enforcement. The Police were isolated in their enforcement role without the possibility of any assistance.

4.4 Further legislation which was being planned i.e.

Classification, Packaging and Labelling Regulations, 1984 (CPL).

The Dangerous Substances (Conveyanced by Road in Packages) Regulations; 198- (PGR)

The Ionising Radiation Regulations; 198-

The Dangerous Substances (Conveyance of Explosives Regulations); 198-

only exacerbated the situation, as in each of those Regulations the Police were nominated as the sole enforcement agency. The task of training Police Officers to perform an "on the road" enforcement role under these circumstances was clearly impossible. The impending Regulations also emphasised the need for technical assistance.

4.5 However, enforcement initiatives were undertaken from time-to-time and enquiries made in May, 1985, indicated that up to that time 17 Police Forces throughout England and Wales had carried out such exercises and a total of 1,116 tankers and tank containers carrying dangerous substances had been stopped and checked. Of these 176 were found to be in alleged breach of the Regulations (i.e. 15.7%).

4.6 It may be expedient to point out that a large percentage of the vehicles stopped and checked were petroleum carrying tankers. I don't believe that you require me to point out the difference in capacity for danger, between petroleum and a toxic or highly corrosive chemical. Perhaps this highlights the trepidation of Police Officers when assigned to the task of checking tankers that they tend to concentrate on petrol, the less dangerous product, as opposed to chemical.

4.7 As a temporary measure a system of reporting offences to the H.S.E. for follow-up enquiries was introduced to ease the situation but this was only found to be working successfully in certain areas of the Country.

4.8 I may add that on the 2 or 3 occasions we in Cleveland have required professional assistance to prove offences, our local arrangements have been very successful.

5. THE FUTURE

5.1 It was therefore decided that as no-one was willing formally to assist the Police in the enforcement of the Tanker Regulations several sections of which had been identified as being much better controlled and enforced on-site rather than in transit, or in the compendium of complicated proposed Regulations representation should be made for a complete change of policy.

5.2 This resulted in the Health and Safety Executive accepting full responsibility with the proviso that the Police and Department of Transport would act as their eyes and ears. This was accepted.

5.3 Concern has been expressed from certain quarters about this change of policy. Fears are expressed that there will be a reduced level of enforcement. This is not the case.

5.4 The activity of the Police will still be as intense as before if not more so. Enforcement initiatives will be arranged on a regular basis throughout the Country and additionally, tankers and tanker containers will still be stopped by patrolling Police Officers and I will describe that activity later.

5.5 The difference will be that enforcement will be undertaken by the Health and Safety Executive whose Factory Inspectorate have the chemical and engineering qualifications to justify their role. All infringements identified by the Police or the Department of Transport will be reported to the H.S.E. Factory Inspectorate on a prepared form. The H.S.E. will, where necessary, follow-up the infringement notification with site visits to examine all on-site activities of the firm concerned. In this way a minor offence by a driver could mushroom into identifying numerous offences being committed by a disreputable operator.

6. FUTURE ENFORCEMENT - THE CORPORATE APPROACH

6.1 Responsibility for enforcement will rest with the HSE Inspectors at premises where they enforce the Health and Safety at Work Act and its relevant statutory provisions:

FACTORY INSPECTORS - at factories, on the road and in public places.

MINES & QUARRIES INSPECTORATE - at mines and quarries.

AGRICULTURE INSPECTORATE - at farms.

RAILWAY INSPECTORATE - at premises for which they are responsible.

LOCAL AUTHORITY INSPECTORS - at premises where they enforce the HSW Act.

HIGHER TIER LOCAL AUTHORITY PETROLEUM OFFICERS - unloading petroleum spirit at petroleum filling stations under the licensed premises licence for keeping petroleum spirit.

6.2 Offences identified by the Police or Department of Transport Examiners will be reported to the appropriate authority.

6.3 ROADSIDE INSPECTION

When the change of enforcement occurs, Police Officers will lose certain powers which they had as "Inspectors" under Section 20 H.S.W. Act, but this will, in no way detract from their ability to control the situation.

6.4 Numerous powers are still available to them. Under Section 159 Road Traffic Act, 1972 Police Officers are empowered to stop vehicles on the road and Police Officers appointed under Section 53 of the Road Traffic Act, 1972 are empowered to carry out mechanical examinations of motor vehicles.

6.5 If a motor vehicle is found to be in such a dangerous condition that it is considered that to allow it to continue on its journey would put the lives of the public at risk, Police Officers have common law powers to prohibit the movement of that vehicle. Department of Transport Traffic Examiners can prohibit the vehicle from further movement if the vehicle is in an overloaded condition.

6.6 Under the Police and Criminal Evidence Act of 1984, (in the Notes of Guidance, 1B of the Codes of Practice, Part C), the Police are entitled to question any person from whom they think useful information can be obtained.

6.7 Under the Police and Criminal Evidence Act, 1984, Part 2, Sections 19(3) and Section 23, the Police may also seize and preserve evidence of any offences which they come across while lawfully on premises. Premises includes motor vehicles.

6.8 The Packaged Goods Regulations will require drivers on the request of Police Officers or Traffic Examiners to produce consignment notes, transport documents and information in writing to identify the nature and quantity of dangerous substances being conveyed. Eventually the Road Tanker Regulations will have the same requirements.

I'm sure you will agree that these powers will be sufficient for them to carry out their duties in this respect.

6.9 Quite simply, Police Officers will be checking parts of the Regulations which can easily be done at the roadside:

(i) That the driver has knowledge of the substance carried and has attended a course of instruction.

(ii) That the vehicle or package is correctly labelled.

(ii) That the vehicle is parked correctly.

6.11 ENFORCEMENT INITIATIVES

Factory Inspectors are not empowered by the Road Traffic Act to stop vehicles on the road so checks of vehicles in transit can only be carried out after consultation and in co-operation with the Police. Such operations will be regularly and carefully planned.

6.12 It will be possible on occasions to combine such roadside inspection of tankers with vehicle weight checks being carried out by Traffic Examiners.

6.13 The H.S.E. will be fully involved in enforcement initiatives but unfortunately they are not organised to provide an on-call service for Police Officers or Traffic Examiners who discover apparent offences of the regulations on the road while operating independently of H.S.E.

6.14 Police Officers and Traffic Examiners will have to decide whether the situation they have discovered is an emergency presenting a level of risk which prevents the vehicle from continuing on its journey. If so, they will use their powers to detain the vehicle until the emergency is dealt with and where appropriate make arrangements for investigation by an H.S.E. Factory Inspector. In cases where there is no immediate risk or the level of compliance is negligible the vehicle involved may be allowed to continue its journey, once the notification form has been completed.

ARRANGEMENTS FOR DEALING WITH EMERGENCIES

6.15 An emergency is defined as:-

"Any situation involving a road tanker or tank container or vehicle containing packages etc. where there is a serious and imminent danger to persons, which may include members of the public, which is caused by or aggravated by the presence of a dangerous substance, and which prevents the vehicle

(ii) to recognise the need to approach tankers and packages containing dangerous substances correctly and safely;

(iii) to control incidents involving spillages of dangerous substances and bring them to satisfactory conclusions;

(iv) to know from where advice and assistance can be obtained.

7.2 Standardisation of training throughout the Police Service is essential and with that in mind provisional programmes for training have been submitted to the H.S.E. for approval. Once this has been obtained they will be put before the Association of Chief Police Officers for authorisation.

7.3 Training Courses will be continued in this Force with valued assistance from local industry. These Courses are open to anyone who requires such training and will equip training Officers in particular to become proficient in the subject of transportation of hazardous substances and incident control for in-force training.

7.4 Fire and Ambulance Officers, Local Authority Emergency Planning Officers are also invited to attend as the cross fertilisation of ideas is essential.

7.5 There is no doubt in my mind that to be able to successfully control the movement of dangerous substances in a safe manner, co-operation between the Emergency Services, the Health and Safety Executive and Industry is of paramount importance.

8. CONCLUSION

8.1 I have spoken at great length about offending against Regulations and of Enforcement but I am very much aware that the chemical and transport industry nationally have a very good record in safety aspects and in abiding by the law to the letter, difficult though that may be.

8.2 I hope that we shall rarely have to put our new procedures into operation and that our training for controlling incidents will never have to be used.

8.3 The Police Service is not abdicating responsibility for dealing with vehicles involved in the conveyance of hazardous substances. We will be part of a better co-ordinated, more effective approach to the problem. We will continue to play our part in the continuing liaison involving Government Departments, Industry and Emergency Services. A liaison designed to promote safety on our roads.

ROBERT K. LANE

METHODS OF DISPOSAL OF HAZARDOUS WASTES IN CANADA

COMPANY/ORGANISATION: Environmental Protection Service, W & N Region Conservation & Protection Environment, Canada.

PRESENT POST:

Director, Environmental Protection Service for the region of Canada that includes the provinces of Alberta, Saskatchewan and Manitoba; and the Northwest Territories.

Responsibilities include: ensurance of appropriate environmental protection measures where there is federal involvement or interest; promotion of national standards for environmental protection and co-ordination of regional research and development.

ANTECEDENTS:

Born in Brandon, Manitoba, Canada on 7th February, 1937. In 1957, he obtained a Bachelor of Science at Brandon University, in 1962 a Master of Science at Oregon State University and in 1965, a Doctor of Philosophy (in Physical Oceanography) at Oregon State University.

His career to date consists of forecasting at the Meteorologial Service of Canada; ocean research at the Fisheries Research Board of Canada; Great Lakes research at the Canada Centre for Inland Waters; water study of Western Canada for Canada West Foundation and pollution control at the Environmental Protection Service,

SPECIFIC INTERESTS

Limnology, remote sensing (Principal Investigator, SKYLAB and LANDSAT), pollution control.