



**European Commission Questionnaire on
Directive 96/82/EC on the Control of Major
Accident Hazards involving dangerous
substances (SEVESO II) 2000 – 2002: United
Kingdom Response**

Introduction

Article 19, Paragraph 4 of the Seveso II Directive (Council Directive 96/82/EC of 9 December 1996 on the control of major-accident hazards involving dangerous substances) requires each Member State to provide to the European Commission a three yearly report giving details of how the Directive has been implemented within the Member State. The reports are made in accordance with the procedure laid down in Council directive 91/692/EEC of 23 December 1991 standardising and rationalising reports on the implementation of certain Directives relating to the environment for establishments covered by Articles 6 and 9 of the Seveso II Directive.

The reports are sent to the European Commission on behalf of the COMAH Competent Authority, which comprises HSE and the Environment Agency in England and Wales and HSE and the Scottish Environment Protection Agency in Scotland. This latest report is for the years 2000 to 2002. Any queries about the report should be addressed in the first instance to Mr Tim Beals (timothy.beals@hse.gsi.gov.uk, tel 0151 951 4885). This report is also available at the European Commission Seveso II web-site (<http://europa.eu.int/comm/environment/seveso/>), as are the reports from the other Member States.

1. General Information

	2000	2001	2002
a. Total number of top tier (TT) establishments	362	356	364
b. Total number of lower tier (LT) establishments	791	759	748

Note: The national transposition measures introduced by the Control of Major Accident Hazards (COMAH) Regulations 1999 were applied according to the strict Seveso criteria. The need to provide separate data on the numbers of establishments according to both the Seveso criteria and national classifications does not apply.

2. Safety Reports

	2000	2001	2002
a. For each year of the reporting period, the number of establishments that should have sent a safety report to the Competent Authority but have not done so.	NIL	NIL	NIL

Note: All establishments required to submit a safety report (SR) in a given calendar year did so. However, a number of establishments did not submit their SRs to the Competent Authority (CA) by the due date. On a number of occasions this resulted in formal enforcement action being taken to secure compliance. This was achieved via the issuing of an Improvement Notice (IN) requiring establishments to submit their SR by a mutually agreed second deadline. Failure to comply would have resulted in the operators of the establishments being liable to prosecution under the COMAH Regulations 1999. All operators complied with the terms of the INs and submitted their SRs by the second deadline.

In total:

- 8 INs were issued in 2000 (6 requiring submission of the initial SR and 2 agreeing to a delay in the date of submission);
- 1 IN was issued in the year 2001 (requiring submission of the initial SR);
- 1 IN was issued in the year 2002 (requiring submission of the initial SR)

All 10 INs are included in the figures given in the Voluntary Information part of Section 7 below.

	2000	2001	2002
b. Number of establishments for which safety reports have been examined by the Competent Authority and conclusions communicated to the operator (as a running total of reports with completed assessments).	11	38	111

Note: These figures represent the **total** number of safety reports (SRs) fully assessed by the Competent Authority (CA). They include SRs where the assessment has been completed and the SR has been accepted **and** SRs where the assessment has been completed but the SR has been rejected. The (running totals) breakdown for each year is as follows:

- 2000 - 7 SRs accepted, 4 rejected;
- 2001 - 27 SRs accepted, 11 rejected;
- 2002 - 91 SRs accepted, 20 rejected

Approximately 12% of COMAH top tier sites (45 establishments) have submitted SRs containing multiple 'parts', ranging from 2 to 26 separate mini reports for various discrete processes and/or areas of the site. The CA does not consider these SRs as complete until **all** parts have been fully assessed and accepted. The considerable work undertaken by the CA in assessing these sites is therefore not fully reflected in the figures given above.

Voluntary information: requested on the target figures of the time needed for examination of safety reports.

We aim to complete the examination and communicate conclusions within 12 months* of receipt of the initial safety report (SR). The SR assessment process consists of 2 stages:

- an initial read to check whether the key information is present, the expected hazards have been identified and that the risk analysis is appropriate, for which conclusions are sent after 10 to 12 weeks; and
- a full assessment to ensure the risk analysis method is proportionate to the hazards and risks found.

* Completion within 12 months - our performance measure has been amended. The 12 month period now means "12 months in the possession of the Competent Authority (CA)". This change was made because operators have required lengthy periods to provide further information and meet the demonstrations.

For revised reports (ie: Article 9(5) reports) and for significant changes on existing establishments, we aim to examine and communicate conclusions within 6 months of receipt. For major developments on existing establishments we encourage regular discussion between the operator and CA and staged submission of information.

For new establishments the SR is required in 2 parts. For the initial design stage, the target for assessment is 3 months, although we encourage regular discussion between operator and CA and submission of information in stages in line with progress of the project for design. For the full report, which includes the operational issues, the target for assessment is 6 months.

3. Emergency Plans

	2000 - 2002 inclusive		
<i>a. For how many establishments (among those whose safety report has been examined) does the safety report demonstrate that internal emergency plans have been drawn up?</i>	358		
<p>Note: The Competent Authority (CA) undertakes an 'initial read' of each submitted safety report (SR). At this stage, a check is made to ensure the SR contains an internal emergency plan. It is from this early look at the SR that inspectors have based the 'yes'/no' responses discussed below.</p> <p>The figure given above represents the estimated total number of establishments believed to have drawn up internal emergency plans in the 3 year period. It is based on a sampling exercise.</p> <p>From early 2001, we have amended the SR assessment process to explicitly require rejection at the initial read stage if there is no internal emergency plan (see Voluntary Information of Section 2 above). In future, all accepted SRs will have an internal emergency plan.</p>			
<i>b. General statement on the way external emergency plans are drawn up and on the information exchange flow between operators and the Competent Authority.</i>			
<p>Operators are required to provide information from their safety reports directly to Local Authorities (LAs) who draw up the external emergency plans. Initially, LAs were reluctant to start preparing emergency plans until the Competent Authority (CA) had successfully completed its assessment of the safety report.</p> <p>The CA writes to:</p> <ul style="list-style-type: none"> • LAs to advise them of when the initial read of the safety report (described above) is complete; • operators to request that they provide the required information to LAs. <p>The aim is for these letters to be completed within 10 to 12 weeks of receipt of the safety report.</p> <p>In practice, the above meant there was an initial delay in amending existing CIMAH (Seveso I) external plans. Subsequently, however, this has led to a more effective exchange of information for the new Seveso II establishments.</p>			
	2000	2001	2002
<i>c. How many establishments have an external emergency plan drawn up by the designated authorities (expressed as a running total)? *</i>	8	51	140

Note. The figures presented refer to external emergency plans recorded as being prepared and finalised in compliance with COMAH. They do not mean that there were no off-site emergency plans in place for other establishments. It should be noted that approximately 250 sites previously operating as CIMAH establishments had external emergency plans in place when the COMAH Regulations came into force. Those plans remained extant and relevant when COMAH did come into force, even if not originally prepared in order to comply with those Regulations.

COMAH external emergency plans cannot fully be developed until certain steps in the safety report assessment process have been completed. There must be agreement on the identified major accident scenarios, that is, the hazards the plans must cope with. There is then a consultation process involving those concerned with development and delivery of the plans and often members of the public or those representing them.

The Seveso II Directive required operators of sites new to major accident hazard regulation to provide by early in 2002 information to the authorities responsible for drawing up external emergency plans in order to enable them to prepare the plans. In the case of operators of sites previously subject to CIMAH the corresponding date was early in 2001. However, many sites new to COMAH were not required to submit safety reports until February 2001. In both cases, for the reasons outlined above, even when they received the necessary information, it would have taken some time for the plans to be prepared by the authorities.

For a small number of sites major accident consequences do not extend beyond the site boundary and no external emergency plan will be required.

<i>d. In how many cases has the Competent Authority decided, in view of the information contained in the safety report, that the requirement to produce an external emergency plan shall not apply?</i>	NIL	NIL	NIL
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Voluntary information: requested on the testing of the emergency plans.

The Competent Authority (CA) prescribes that testing of emergency plans should be carried out but does not prescribe what the tests should be. The testing should be appropriate to the major hazard scenarios for the site. Testing ranges from simple alarm and muster exercises to full-scale demonstrations involving local emergency services.

4. Domino Effects

Voluntary information: requested on the methodology for identifying a “domino area”.

Domino sites are designated by HSE on behalf of the Competent Authority. A contour is set around each site, known as the Consultation Distance (CD)*, which is given to each establishment for land use planning purposes. This contour, where it overlaps with the physical boundaries of other COMAH sites, is used as the basis to designate domino groups.

* A CD is a risk (of death or serious injury to people) contour (for toxics) or hazard contour generally for flammables and explosives) or a combination of both (where both flammables/ explosives and toxics are present).

a. How many groups of establishments have been identified where the likelihood and the possibility or consequences of a major accident may be increased because of the location and proximity of such establishments (domino effect)?

At 31 December 2002, 66 such groups of establishments had been identified. The average number of establishments per group is 3.5, ranging from 2 in the smallest group to 10 in the largest.

b. Information on the strategy followed for ensuring that suitable information is exchanged in an appropriate manner between establishments liable to be affected by the domino effect.

The Competent Authority (CA) notifies each operator when they are in a domino group. It also advises them who the other members of the group are. Members should exchange necessary information in writing, which the CA may check. Operators receiving such information should review whether they have taken all measures necessary to limit consequences for their site. This can be checked for top tier (TT) sites when operators send in revisions to safety reports (which they are required to do should their site be affected) or by raising the issue with operators where no revision has been submitted. For lower tier (LT) sites, such information should be presented in the Major Accident Prevention Policy (MAPP), which each operator must prepare and maintain and which must be available for inspection by the CA.

c. Information on the strategy followed for ensuring cooperation in informing the public and supplying information to the Competent Authority between establishments affected by the domino effect.

Operators have a duty to provide information to members of the public liable to be affected by a major accident. Operators of such sites must cooperate to ensure that their public information reflects this. Preparation of information for the public is essentially a role for the operator, in consultation with the local authority (LA). The LA is made aware by the Competent Authority (CA) of the domino designation and may therefore take this into account in the development of the operators' advice. Within the CA, information is provided in internal advice to allow units to check that operators are complying.

5. Land-use Planning

Explanation of the measures for controlling new developments around existing establishments (top tier and lower tier).

Article 12 has been implemented by introducing separate regulations. In England and Wales these are the Planning (Hazardous Substances) Regulations 1992 as amended and, in Scotland, The Town and Country Planning (Hazardous Substances) (Scotland) Regulations 1993 as amended.

Administration and enforcement of the above regulations lies with Hazardous Substances Authorities (HSAS) and Planning Authorities (PAs) who, with Local Authorities (LAs), are responsible for granting consent to establishments wishing to construct buildings for the storage and/or production of hazardous substances subject to the terms of the Seveso II Directive. Responsibility also falls to them for granting permission to develop the land in the vicinity of these establishments.

Where new planning consents are concerned, PAs are required to consult either singly with the Health and Safety Executive (HSE) where only health and safety considerations are at issue or jointly with HSE and their respective English/Welsh or Scottish environment counterparts (the Environment Agency (EA) or Scottish Environment Protection Agency (SEPA)) respectively where environmental matters also need to be addressed. The Competent Authority (CA) partners can respond individually or jointly depending on the issues being considered. This ensures all hazardous aspects of new consent applications are properly considered in terms of the possible human and environmental impact arising from a major accident. On behalf of the CA,

HSE defines zones around each establishment based on:

- risk to humans of toxic releases and/or
- hazard for flammable or explosive effects.

The PA is also required to consult on most proposed developments within the zoned area. Again, HSE and EA/SEPA will advise on the compatibility of the development with its proposed location.

Appeals Procedures are in place that allow for cases where the developer or any CA partner is dissatisfied with the conclusion reached by the LA.

Voluntary information: *basic explanation requested of the kinds of control/ limitations on building in the different areas; in particular, the way Article 12 is implemented in practice. Answers to simple questions eg: "why would it be impossible (or very difficult) to build new houses next to a Seveso site?" An example*

showing difficulties in implementation of Article 12 would also be useful.

Most establishments have a defined inner, middle and outer zone - in order of decreasing risk of harm from identified major accident scenarios. In some cases, the inner zone is within the boundary of the establishment itself. HSE has codified developments that are compatible with each zone by considering the:

- number of people present;
- duration for which they will be present;
- ease with which they can be evacuated

The following examples illustrate the application of this policy:

1) inner zone - HSE would not advise against:

- workplaces for up to 100 people;
- public car parks

but would advise against.....

- larger workplaces;
- car parks with leisure amenities;
- housing

2) middle zone - HSE would not advise against:

- larger workplaces, retail or leisure developments less than 5000 m²;
- small housing developments

but would advise against.....

- larger retail developments;
- larger or high-density housing developments

3) outer zone - HSE would not advise against:

- schools;
- some hospitals

but would still advise against.....

- larger hospitals;
- accommodation for elderly people;
- funfairs;
- sports stadia

6. Information on Safety Measures

	2000 - 2002 inclusive
<i>a. Over the three-year period, how many establishments have issued information to the public at least once?</i>	273

Note: The Competent Authority (CA) does not hold this information on its databases. The figure given above represents the estimated total number of establishments believed to have issued information to the public at least once in the three year period. It is based on a sampling exercise using a survey. If no response was received from an operator the work was treated as not having been done, and consequently significant under reporting is suspected. For a small number of sites the major accident consequences do not go beyond the site boundary and no distribution of information is required. It is not anticipated that there is a lack of provision of information to the public. However, where there was such a lack appropriate enforcement action would be taken.

b. In how many cases has the Competent Authority made available to other Member States sufficient information to enable them to prepare emergency plans?

None.

	2000	2001	2002
c. In how many cases has the Competent Authority provided information to another Member State concerning establishments capable of creating a major accident hazard beyond its boundary?	NIL	NIL	NIL

d. Generic information on the strategy for making safety reports available to the public.

The Competent Authority (CA) is required to maintain a register for inspection by the public free of charge, containing notifications to the CA, safety reports, notifications of domino groups and communications of safety report conclusions. Provision is made for the exclusion from the register of commercially and personally confidential information, and information contrary to national security interests. In England and Wales the register is maintained at local Environment Agency (EA) offices, whilst in Scotland the register is available for viewing at offices of the Scottish Environment Protection Agency (SEPA).

Following the incident in New York on 11 September 2001, the Secretary of State has directed that safety reports should be excluded from public registers until further notice on the grounds of national security. This remained the case at 31 December 2002. The CA will provide certain information contained in a safety report (other legislation requires this) to any individual requesting it, subject to certain exclusions, including personal confidentiality and matters of national security, as mentioned above.

7. Prohibition of Use

	2000	2001	2002
In how many cases has the Competent Authority prohibited the use or bringing into use of any establishment, installation or storage facility covered by Article 9? (<i>ie</i> : top tier establishments). Support with a brief summary of each case.	1	5	3

Note: Case summaries are listed at Appendix 1.

Voluntary information: description of the different instruments the Competent Authority might use (letter of formal notice, fine, temporary closure etc.) as well as statistical information (in how many cases have letters of formal notice been sent, fines levied or temporary closures instigated etc.) would be appreciated at least for the year 2002.

The main formal enforcement measures used are i) improvement notices (INs) which inspectors have powers to use under the Health and Safety at Work etc Act 1974 when, in their opinion, there is a breach of legislation and ii) prohibition notices (PNs) where they identify a very serious risk. Operators have the right to appeal against these notices to independent tribunals that deal with a range of employment legislation. Article 17 prohibition powers have been included as part of this notice procedure and the prohibition figures set out above relate to the use of this power.

PNs may be 'immediate' or 'deferred' depending on, for example, whether greater potential risk may be caused by shutting a process down immediately or whether it is more prudent to allow the operator to let it run its normal cycle and then to call a halt to the activity. For less serious risks, INs are served. For more minor breaches in compliance a verbal warning followed by a letter may be used.

The figures below are those for INs where a breach of COMAH has been identified and additional PNs (to those stated above) issued relating to major accident prevention and mitigation at COMAH sites.

		2000	2001	2002
<i>Improvement Notices (INs) referencing breach of COMAH</i>	Lower Tier (LT)	15	21	7
	Top Tier (TT)	31	50	64
	Total	46	71	71
<i>Prohibition Notices (Immediate) (PNs-I) referencing breach of COMAH</i>	LT	1	1	3
	TT	2	3	3
	Total	3	4	6
<i>Prohibition Notices (Deferred) (PNs-D) referencing breach of COMAH</i>	LT	1	3	1
	TT	NIL	15	NIL
	Total	1	18	1
<i>Prosecutions associated with COMAH activity</i>	LT	NIL	NIL	4
	TT	1	3	4
	Total	1	3	8

8. Inspection

Voluntary information: overview requested of the strategy for inspection, in particular in cases where a systematic appraisal is carried out. Figures on person-hours spent on average for inspections, the basis for computation and brief description of the task of the inspectors would also be of interest.

COMAH is regulated in England and Wales by a Competent Authority (CA) comprising the Health and Safety Executive (HSE) and the Environment Agency (EA). In Scotland the CA comprises HSE and the Scottish Environment Protection Agency (SEPA). Inspection plans are developed and agreed within the CA at local level and implemented either by joint visiting or with one part of CA taking the lead depending on whether the inspection issues relate to people's health and safety or the environment.

Inspection plans based on a systematic appraisal of the major hazards present are required for all COMAH establishments. The plans identify all significant inspections required at establishments, embracing issues concerning conventional health and safety issues, major accidents and national initiatives **eg:** location of occupied buildings, exothermic reactions, tanker offloading etc.

One or more inspectors may carry out inspections. We ensure that the required technical skills are provided to deal with the topics identified in the plan. When on site - and depending on the reason(s) for the visit - inspectors will verify that conditions reflect the safety report descriptions, read additional documentation (not provided in safety reports), interview management and employees, observe physical standards and assess operators' safety management systems. General guidance on enforcement action has been published by HSE and shared across the CA to enable a consistent approach. Advice will be given by inspectors, or enforcement action taken, proportionate to the shortfalls identified.

For top tier (TT) establishments, inspection priorities have been set based on CIMAH reports and past contacts. These inspection plans for each establishment are reviewed and revised by the assessment team following assessment of the safety report. The assessment team comprises inspectors with regulatory, safety management, technical, predictive and environmental specialist skills. The same people are also responsible for conducting the inspections and know the conditions at the establishment. Central direction on overall inspection policy and programming is issued from the headquarters of the respective CA partners. However, decisions on implementation with respect to individual sites are a matter for local decision making at CA divisional/ regional office level.

Inspection plans for TT establishments cover the period up to the next review/revision of the safety report - usually 4 to 5 years. The plans are based on the outcome of the assessment, knowledge of the establishment from previous inspections, investigations of complaints, accidents and incidents and

industry sector intelligence. The plans are reviewed annually at local level.

Top Tier establishments - average time spent in hours per activity per calendar year

Activity	HSE			EA			SEPA		
	2000	2001	2002	2000	2001	2002	2000	2001	2002
Inspection (inc enforcement)	6.6 (58)	22.8 (258)	28.2 (286)	3.5 (57)	4.8 (75)	8.7 (81)	7.4 (50)	5.7 (43)	6.9 (33)
Assessment	14.9 (53) *	76.2 (273) *	54.0 (368) *	10.8 (69)	10.0 (211)	10.1 (273)	Not available	3.8 (62) *	7.1 (95) *
Investigation	10.5 (20)	56.8 (72)	24.7 (61)	Not available	7.4 (13)	8.6 (1)	Not available	Not available	6.5 (1)
Domino issues	0.5 (3)	0.7 (98) *	1.6 (5) *	NIL	NIL	NIL	NIL	NIL	NIL
Derogation (of Safety Reports)	NIL	3.5 (3)	NIL	NIL	NIL	NIL	NIL	NIL	NIL

Notes: i) Figures in brackets refer to the number of establishments visited;
 ii) * These figures include some sites that have since dropped out of top tier status.

Lower Tier establishments - average time spent in hours per activity per calendar year

Activity	HSE			EA			SEPA		
	2000	2001	2002	2000	2001	2002	2000	2001	2002
Inspection (inc enforcement)	5.2 (77)	9.7 (318)	10.7 (295)	Not available	4.8 (38)	5.9 (64)	5.5 (64)	3.6 (68)	4.4 (80)
Investigation	7.4 (8)	14.2 (43)	12.6 (25)	Not available	NIL	4 (1)	Not available	Not available	NIL

Note: Figures in brackets refer to the number of establishments visited.

	2000	2001	2002
<i>a. How many top tier establishments have been subject to inspection as referred to in Article 18.1?</i>	HSE = 235 (EA = 57 SEPA = 31)	HSE = 270 (EA = 75 SEPA = 38)	HSE = 293 (EA = 81 SEPA = 29)
Voluntary information: <i>How many lower tier establishments have been subject to inspection as referred to in Article 18.1?</i>	HSE = 308 (EA = not available SEPA = 71)	HSE = 357 (EA = 38 SEPA = 76)	HSE = 317 (EA = 64 SEPA = 78)

Note: The top figures given in each column reflect the number of establishment inspections carried out by HSE. This is the **minimum** number of different establishments that will have been conducted by the Competent Authority (CA) in each calendar year. However, to fully assess their environmental interests the other CA partners, EA and SEPA, are also known to have carried out the number of inspections given in brackets in each calendar year. A great many of these inspections will have been carried out jointly with HSE but some will have been carried out by EA and SEPA alone. At present, it is difficult to identify the sites that fall into this category. Hence, for the calendar years covered by this report, total CA establishment inspections will almost certainly be greater than the headline figures quoted.

b. How many top tier establishments are subject to:

- *an inspection programme based on systematic appraisal?*
- *an inspection programme based on at least one on-site inspection every 12 months?*

All top tier establishments are subject to an inspection plan (see above) based on systematic appraisal. In most cases the inspection plan identifies that an on site inspection is required at least every 12 months.

Appendix 1

In Section 7 - Prohibition of use - the question was asked:

In how many cases has the Competent Authority prohibited the use or bringing into use of any establishment, installation or storage facility covered by Article 9? (ie: top tier establishments). Support with a brief summary of each case.

The supporting summaries are given below.

2000

1. During manufacture of a substance derived from the mixing of sorbitol ($C_2H_{14}O_6$), ethylene oxide (C_2H_4O) and potassium hydroxide (KOH), the reaction was noted to be running slowly. It was decided to vent pressure to the scrubber in order that more ethylene oxide could be added. An explosion occurred which blew the bursting disc on the reactor and damaged the catchpot linked to the reactor for relief venting. There were no injuries or fire.

Although nitrogen (N_2) inerting was used, investigation showed there was insufficient nitrogen present in the reactor to prevent the mix gases from reaching the flammable zone. Investigators were unable to identify the source of ignition. An immediate prohibition notice (PN) was issued as the accident meant there was no emergency relief venting available for oxide reactions. The operator fully complied with the notice by replacing the existing relief venting system and catchpots with new vessels and pipework.

2001

1. At the time of a routine inspection, it was noted that the operator was storing a volume of arsenic trioxide (As_2O_3) in excess of the threshold triggering COMAH top tier status. As the site was not registered as a COMAH establishment, a deferred PN was issued requiring the operator to reduce arsenic trioxide levels to below 100kg. The operator subsequently removed all arsenic trioxide from the site, thereby complying with the terms of the PN and becoming a non-COMAH site in the process.
2. The Competent Authority (CA) considered that the production process for manufacturing a particular hazardous chemical was seriously deficient in respect of the measures taken to prevent and to limit the consequences of a major accident. A deferred PN was issued.
3. The operator of a lower tier COMAH establishment was storing a volume of ammonium nitrate (NH_4NO_3) in excess of the threshold triggering COMAH top tier status. A deferred PN was issued requiring the operator to reduce ammonium nitrate levels to the appropriate COMAH lower tier threshold.
4. An immediate PN was issued preventing the importation onto site of oxidising chemicals because:
 - all reasonably practicable measures had not been taken to fight a fire, namely:
 - there was an inadequate supply of water on site;
 - stocks of timber and oxidising material were stored in close proximity and were not separated by a half hour fire resisting structure
 - there was no risk assessment (RA) in place to prevent the storage of incompatible chemicals adjacent to each other;
 - there was no management system in place to ensure that pallets did not become grossly contaminated with oxidising materials (or were safely disposed of should they become so contaminated)
5. The measures taken by the operator for the prevention and mitigation of major accidents were seriously deficient. The integrity of arrangements for effective process control and emergency relief venting at 3 batch reactors had not been ensured. An immediate PN was issued requiring the operator to take

measures to prevent or to limit the consequences to persons or the environment of releases of reaction materials during uncontrolled developments such as reaction runaway, excessive gas evolution, bursting disc failure or other foreseeable events.

2002

1. The operator failed to ensure the mechanical integrity of bulk storage tanks, associated pipework and fittings used to store toxic chemicals and highly flammable liquids. An immediate PN was issued requiring the operator to fully assess the mechanical integrity of the tanks, pipework and fittings and to implement any remedial measures identified.
2. The measures taken by the operator for the prevention and mitigation of major accidents were seriously deficient in that the vibratory conveyor associated with a drum handling plant sometimes operated within the flammable range. It was foreseeable that an explosion of flammable vapours within the vibratory conveyor could cause serious injury or death to employees working in the vicinity. An immediate PN was issued.

Specifically, the issues to be addressed were:

- the provision of nitrogen purging to ensure that the oxygen (O₂) atmosphere inside the conveyor was controlled to 5% or below;
 - the provision of an oxygen sensor to warn if the oxygen level exceeded 7% and which would shut down the conveyor at the 10% level;
 - the carrying out of an RA to determine the measures to be taken by operators on activation of the high oxygen level alarm;
 - training of employees in the measures to be taken in the event of the high oxygen level alarm being triggered
3. A loss of containment incident involving release of a large quantity of bromine (Br) to the atmosphere and the environment resulted in injury to 4 people - including 2 off-site - who required hospital treatment. An immediate PN was issued requiring the operator to review the integrity of the arrangements in place to prevent loss of containment of bromine by over-filling of the intermediate storage vessels.