

REPORT FOR THE DEPUTY PRIME MINISTER
THE RIGHT HON JOHN PRESCOTT MP
INTO THE MAJOR FIRE ON 30 OCTOBER 2000
AT CLEANSING SERVICE GROUP LTD
SANDHURST

Upper Parting Works,
Sandhurst Lane,
Sandhurst,
GLOUCESTER GL2 9NQ



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AGENCY**

This is a joint report produced by the Health & Safety Executive and the Environment Agency at the request of the Right Honourable John Prescott MP into the circumstances surrounding the fire at Cleansing Services Group Ltd, Sandhurst, Gloucester which occurred on 30 October 2000.

CONTRIBUTORS:

We are grateful to the following organisations for assistance in producing sections of this report:

- Gloucestershire County Council
- Gloucestershire Health Authority

EXECUTIVE SUMMARY

Incident

1. A fire occurred at approximately 02.00 on Monday 30 October 2000 in a waste storage area at Cleansing Service Group Ltd (CSG), Upper Parting Works, Sandhurst, Gloucester. The site is a licensed waste treatment facility and transfer station for a wide range of hazardous waste chemical substances and is notified as a Control of Major Accident Hazard Regulations 1999 (COMAH) Lower Tier site.
2. The seat of the fire was in the southwest corner of the waste transfer station compound that was used for the storage of laboratory smalls and some flammable liquids. The direct cause of the fire has not been established with certainty at the present time. The investigation is ongoing.
3. The overall management of the incident was the responsibility of Gold Control set up by Gloucester Police on 30 October 2000. An incident room was set up by the Environment Agency and staffed by Agency and HSE personnel within four hours of the incident starting.
4. Approximately 180 tonnes of mixed chemical wastes including some pesticides and chlorinated hydrocarbon solvents stored within the waste transfer station were consumed in the fire.
5. On 03 November 2000 the site, which is alongside the River Severn, was subject to flooding and remedial actions had to be taken to ensure that fire-damaged and other material on site was moved beyond the reach of floodwaters and the site otherwise made safe. Serious flooding continued until 22 November and high flood water levels continue to threaten the site which flooded again in December.

Offsite Effects

6. The site was unoccupied at the time of the incident. During the fire, approximately 60 people were evacuated from their homes by the emergency services. 13 persons, mainly emergency service personnel, were taken to hospital as a precautionary measure during the fire but none was admitted. Residents were again evacuated when the site flooded as a precaution against any further incidents occurring.

7. In the weeks following the incident there was a large number of reports of illness from local residents, which are being investigated by the local Health Authority. None of the 17,500 tests carried out on over 500 environmental samples, by the Agency and Tewkesbury Borough Council, indicated any significant levels of contaminants off-site. Modelling of the incident by HSE indicated that a "dangerous dose" of toxic materials would not have occurred beyond the site boundary. Monitoring of the health of the local population is continuing.

8. Gloucestershire Health Authority (GHA) does not believe there is any evidence of long-term impairment of the health of any member of the public.

9. The Food Standards Agency, whilst issuing a precautionary notice at the time of the incident, do not believe there is any risk to the food chain based on the monitoring information they have seen.

10. Following the fire, serious concerns about the operation of the site, and any possible off-site effects from the incident, were raised by local residents. Communication channels were set-up to provide information and to listen to the concerns of residents and their representatives, including Councillors and the Member of Parliament. These channels included a local drop-in centre, daily question and answer briefings and media interviews. Senior Agency staff met with residents the Wednesday after the incident and a public meeting was held the week after the fire which was attended by the Agency and HSE (and other members of Gold Control).

Investigation and Subsequent Actions

11. The investigation by Agency and HSE staff commenced as soon as the fire was under control and is still continuing. It has been hampered by the recurring flooding at the site which has prevented access by road and required remedial measures to prevent pollution of watercourses.

12. The investigation includes establishing whether CSG have complied with their legal obligations. If there is evidence of contravention, action will be taken in accordance with the published HSE and the Agency enforcement policies.

13. HSE and Agency staff obtained a commitment from CSG soon after the fire to remove all materials from the site. A plan of action was agreed and is now being implemented in accordance with an anti pollution works notice issued by Agency on 02 November.

14. A Notice of Suspension was served on the site by the Agency under waste management legislation that has prevented further receipt of waste materials until CSG take appropriate actions. This notice is still in force.

15. The planning issues surrounding the location and use of the site are being investigated by Gloucestershire County Council. The incident also highlighted the issues involved in siting installations of this type in locations where there is a risk of extensive flooding. The Department of the Environment Transport and the Regions (DETR) is now considering the lessons learned from the incident and the implications for land use planning policy.

16. The incident is within the definition of a "major accident" as defined under COMAH and is required to be notified to the European Commission.

17. Internal reviews have taken place within the HSE and the Agency of the actions taken by the regulatory authorities on site prior to the incident and, for the Agency, during the incident.

18. The HSE report concluded that the Inspectors exercised their judgement in accordance with HSE's policies and procedures and secured by formal enforcement and advice significant improvements in health and safety on the site. The report also identifies a number of learning points about inspection techniques and enforcement options.

19. The Agency report concluded that the licence in force set a reasonable standard of control with necessary and enforceable conditions but identified some areas for improvement. The site was inspected at the appropriate frequency and the Area team gave priority to improving working practices possibly at the expense of taking formal enforcement action. Action was taken following an incident in December 1997 when CSG accepted a formal caution and paid £21,000 costs. The implementation of the special waste procedures by Agency staff was considered to be good. The Agency response to the incident was considered to be good and there were many supportive comments from external bodies regarding the Agency's role. A number of learning points have resulted from the internal investigation and will be taken into account both at a local level and when revising national policy.

APPLICABLE LEGISLATION AND ENFORCEMENT RESPONSIBILITIES

20. At the CSG Sandhurst site the enforcement responsibilities are as follows:

- HSE: enforcement of health and safety legislation,
- The Agency: enforcement of environmental legislation,
- CA (HSE and the Agency acting jointly): enforcement of major hazard legislation
- Gloucestershire County Council (GCC): enforcement of planning legislation.
- Tewkesbury Borough Council: enforcement of environmental legislation (Authorisation for oil fired boiler).

21. In February 2000 CSG formally submitted a written notification to the Competent Authority that the COMAH regulations applied to the Sandhurst site at the "lower tier" level (see Appendix 1).

22. The key legislation which applies to the CSG Sandhurst site and for which the HSE or the Agency are the enforcing authority, are set out in Appendix 1.

BACKGROUND

Site history and local geography

23. The CSG Sandhurst site was originally a brick works and then a tar works from 1860. CSG purchased the site in 1972 and developed it into the waste treatment facility in operation today. Land adjacent to the site was purchased by CSG in 1994.

24. Details of the waste management licence and planning permission histories, both important in understanding the development of the site, are given in Appendices 5 and 6 respectively.

25. The site is located on the banks of the River Severn to the north of Gloucester, approximately 1.2km from the outskirts of the City and 1.4km west of the village of Sandhurst. The nearest dwelling on the outskirts of Maisemore are about 500m away (see plan in Appendix 10). Local land use is mainly agricultural with some light commercial and residential uses. The western boundary of the site is

adjacent to the River Severn flood embankment whilst the area surrounding the site forms part of the river floodplain. The site is subject to flooding from the river and is also affected by tidal action.

Company

26. CSG is a Limited Company, formed in 1934 as Hampshire Cleansing Service, with the head office in Southampton. It is currently the largest privately owned waste management company in the UK. The group employs 490 staff nationally and has a turnover of £40 million with gross profits of £10.7 million and an operating profit of £4.1 million (accounts for year ended 31 December 1999). The Group has recently expanded with the takeover of the Lanstar waste operation.

27. The CSG Sandhurst site employs a total of 39 staff including an Associate Director, Plant Manager and Assistant Plant Manager with 13 sales and clerical staff, 7 chemists, 13 plant operatives and 3 special waste drivers. The Cleansing Services Group operates a number of other sites in England including landfilling, oil treatment, and other liquid waste treatment processes. The CSG Sandhurst site operations are certified to the quality management standard BS EN ISO 9002 for the management and operation of a waste treatment and reclamation facility.

SITE OPERATIONS

Site layout

28. Treatment operations at the CSG Sandhurst site are centred on a large mixing well of 20m diameter. The southern end of the site is used as a waste transfer area with the bulk of the treatment processes carried out at the north. Entrance to the site is at the northeast, where the offices are also located. Further details are given below and there is a site plan in Appendix 10.

Treatment processes

29. The waste management licence, issued by Gloucestershire Waste Regulation Authority and subsequently amended by the Agency, permits the deposit, keeping and treatment of controlled waste. The activities can be separated into 'transfer' activities involving the storage, repackaging and despatch of waste, and 'treatment' involving physical and chemical processing. The facility is intended to operate as an integrated waste management facility capable of handling a wide range of substances.

30. The treatment processes on site include the mixing of aqueous waste streams in the large mixing well to neutralise the materials added. This treatment results in an aqueous phase which, after testing, is discharged to sewer. The process also produces solid material which is filtered out and disposed of to a landfill site following analysis.

31. The site also receives and treats waste oil to produce a fuel for use on site and for sale. Water produced as a waste from this operation is directed to the large mixing well.

32. Some materials received on site are mixed together, often with absorbent materials such as sawdust or other shredded waste added, before being bulked for transport to a suitably licensed landfill site. This mixing process is carried out in concrete bays in the open using construction plant, such as a mechanical digger.

33. Materials that cannot be treated on site are stored in the waste transfer station and are bulked up wherever possible before being directed to an appropriately licensed disposal/recovery facility.

Substances

34. In general terms, wastes that may be received at the site for 'treatment' under the waste licence are;

- Acids and alkalis
- Industrial effluent treatment sludges
- Metal compounds and inorganic compounds/materials
- Organic compounds including hydrocarbons, solvents, polymers, adhesives, resins, fuels, oils, greases, soap/detergent, sewage sludge and pharmaceutical/cosmetic products.
- Contaminated packaging waste and rubbish
- Filter materials and tank cleaning/interceptor wastes
- Waste from specific industries (printing, paint manufacture, tanneries, food processing)

35. The wastes that may be received at the site for transfer activities include all the general categories given above and additionally the transfer of the following waste types;

- Asbestos
- Metals
- Inorganic compounds which liberate toxic gases on acidification
- Oxidising compounds
- Chlorinated solvents
- Pesticides

36. Some of the above materials are received as "laboratory smalls". Laboratory smalls are generally containers of various sizes up to 5 litres and containing a variety of mixed chemicals, usually packed into larger drums.

37. In general no more than 20 tonnes of any individual substance is permitted to be stored at the site under the waste management licence, with some wastes, particularly the oxidising materials, restricted to a maximum of 50 kg of each.

38. Wastes may be received in a variety of packages varying in size from small aerosol containers to road tankers. Storage in the waste transfer station is similarly in a variety of containers, although the maximum size in this area is generally an IBC (intermediate bulk container of approximately 1m³) although tankers may be handled on occasions.

39. Clinical waste is not included in the substances authorised by the waste management licence.

INCIDENT & EMERGENCY RESPONSE

Fire on 30 October 2000

40. On Monday 30 October 2000 at approximately 02.00, a fire occurred in compound 1 of the waste transfer station in the southwest of the site which was unoccupied at the time. The first call to the emergency services was logged at 02.19 and the Fire Service arrived on the scene within 6 minutes. Photographs showing the site after the fire are contained in Appendix 10.

41. Agency staff attended immediately and were able to give advice to the fire fighting operation. HSE and other parties including Gloucestershire Health Authority (GHA) also attended during the incident. The Fire Service was unable to approach the site for some hours because of the intensity of the fire and small aerosol cans exploding.

42. The incident occurred at a time of severe storms with gale force winds and very heavy rain. Winds speeds peaked at 50 - 60 mph. These extreme weather conditions continued to cause problems throughout the day.
43. The Fire Service set-up a forward command post in the car park of the Globe public house, located on Sandhurst Lane approximately 1km south of the site. At approximately 10.40, this site was evacuated due to the expected flooding of Sandhurst Lane (although this did not actually occur until later in the week). The command post was re-established at the southern end of the lane, approximately 2 km from the site.
44. The Fire Service accessed the site via the fields to the south, due to the very strong prevailing wind from the south. Throughout the day, water and foam were applied to the fire which was concentrated at the south end of the site. The fire was eventually fully extinguished by 18.00 on the 30 October, having burned for approximately 16 hours, although a number of drums involved in the fire continued to smoulder. The fire was restricted to the waste transfer area and did not affect the bulk tank storage on site. Most of the firewater was retained on site, by site containment measures, but some contaminated water escaped and had to be pumped back.
45. The Fire Service remained in attendance overnight. They relinquished control of the site early the next morning, the 31 October, allowing access on to the site for HSE and the Agency to begin investigation of the incident.
46. The fire resulted in the Police evacuating approximately 60 local people at the time, who were allowed to return to their homes that evening, the 30 October. The evacuation itself was hampered by the fumes from the fire. 13 people sought medical advice (mostly emergency service personnel but including some local residents) although none required admission to hospital.
47. Gold Control, consisting of representatives from the emergency services and other relevant local agencies was set up at Cheltenham Police Headquarters to deal with the incident.
48. A precautionary pollution warning was issued to Severn Trent and Bristol Water but there was never considered to be a risk to drinking water abstraction as the Severn Trent abstraction is upstream of the incident. The flooding was preventing abstraction from the river Severn from taking place at the time of the incident and hence Bristol Water was also unaffected.
49. Monitoring of fire fighting water started during the incident and a monitoring strategy was developed by the Agency, together with Tewkesbury Borough Council (TBC), to enable information to be collected to assess the environmental and public health implications of the fire. On 31 October, residents were starting to report ill health effects and there was a meeting between GHA and the Agency with a consultant from the Chemical Incident Response Service on 1 November to discuss these issues.
50. On 01 November the CSG waste management licence was suspended to prevent the site receiving any more wastes whilst maintaining the environmental protection controls.
51. On 02 November, because of imminent flooding of the site, and following the issue by the Agency of an anti pollution Works Notice, CSG working under Agency and HSE guidance, moved waste to compound 3; the highest area on the site. The site was flooded by 03 November and monitoring of conditions by the Agency continued using a helicopter.
52. On Sunday 05 November, access to the site was gained by the Agency using a boat. There was concern over one fire-damaged 205 litre drum that appeared to have reacted. It was found to contain selenium, cadmium and arsenical compounds and had the potential to be a continuing source of emissions.

53. On 06 November, access to the site was again made by boat and a joint audit carried out by the Agency and HSE. During this audit seven 25 litre containers labelled "solvent contaminated with BSE" were discovered.

54. On 07 November, a public meeting was held, attended by representatives from Gold Control (including the Agency and HSE), senior management from CSG and Lawrence Robertson the local MP. At the meeting the presence of the "BSE drums" was reported to the local community by the Agency.

55. On 08 November, because of the continuing risk from rising floodwaters, Gold Control requested that a plan be drawn up to move all "at risk" waste to a higher position on site. Following detailed planning, including a risk assessment by HSE and Agency staff, this flood action plan was implemented on 09 - 10 November. In particular, it required vulnerable wastes such as laboratory smalls to be raised to a height where they would not be affected by floodwater. In addition, empty containers were secured so that they could not escape from the site.

56. The site was subject to on-going air monitoring because of the hazard posed by the selenium drum since access problems prevented its removal from site.

57. When all the remaining material had been secured, the site was evacuated and Agency staff continued to monitor it by helicopter and boat. No materials escaped from the site during the flooding.

58. On 13 November, after the highest floodwater mark had passed, Gold Control stood down.

Discussion of possible causes

59. The seat of the fire was located in the southwest corner of compound 1 (see diagram in Appendix 10). This is based on eyewitness testimony of the first fire crew to attend the incident and examination of the burnt out areas of the site, carried out by HSE, the Agency and Fire Service investigators. The fire then spread to other areas of the site; especially compound 3 which suffered extensive damage.

60. Compound 1 is used as part of the waste transfer operation of the site for the storage and bulking of substances prior to transfer to suitably licensed onward destinations. The following substances were involved (either destroyed or heat damaged) in the fire in compound 1 as shown in the photographs in Appendix 10:

- 12 x 1 tonne containers of isopropyl alcohol in a double stacked row,
- Approximately 60 x 205 litre drums packed with "lab smalls" in 2 double stacked rows,
- Approximately 125 x 205 litre drums, 4 x 1 tonne containers and smaller drums of mixed waste, mostly flammable solvents, adhesives, resins etc,
- 24 x 205 litre drums of acetone in a double stacked row,
- 6 pallets of waste batteries, mostly lead acid plus some nickel/cadmium, lithium, mercury and zinc.

61. Information on the inventory of substances involved in the fire is contained in Appendix 9.

62. Approximately 180 tonnes of mixed chemical wastes including some pesticides and chlorinated hydrocarbon solvents stored within the waste transfer station were consumed in the fire. Not all the materials involved in the fire were dangerous substances as defined in COMAH. In particular only a maximum of 1.1 tonnes of very toxic substances were involved. This should be compared with the figure of 5 tonnes which is the threshold for application of the lower tier requirements of the COMAH regulations for very toxic substances.

63. Damage by flooding and necessary work to make the site safe has made identification of the causes of the fire more difficult. As a result, it may not be possible to identify the cause precisely. Although the investigation is still ongoing, the following comments can be made concerning possible causes of the fire.

64. Of the three things required for a fire, the identification of fuel and oxygen are straightforward, for example the flammable materials mentioned above. It is more difficult to identify the ignition source that initiated this fire.

65. The following are possible sources of ignition that could have occurred:

Chemical origin:

- Reaction involving aluminium and rust (a thermite reaction)
- Unstable materials such as organic peroxides
- Pyrophoric material (spontaneously combustible on exposure to air) such as elemental phosphorus
- Water reactive substances coming in contact with water, reacting and self-igniting or igniting another substance
- Exothermic reaction between chemicals

Electrical origin:

- Batteries
- Electrical apparatus
- Impact sparks
- Electrostatic discharges
- Hot surfaces
- Lightning

Other origin:

- Naked flame, welding cutting etc.
- Mechanical sparks
- Arson

66. Investigations by an HSE electrical specialist has concluded that ignition from electrical origin can be ruled out and with the site being unoccupied at the time of the incident a number of other possible sources (mechanical sparks, hot surfaces, naked flames, etc) can also be discounted.

67. Considering the sources of chemical origin further there are a number of possible scenarios for initiating the fire:

- Small laboratory samples could have lost their containment e.g. as a result of being blown over in storm force winds. They could then have reacted together, generated heat, and eventually ignited a sensitive material amongst them. The fire could then have propagated further. A number of small laboratory sample drums were found close to the remains of IBCs which had contained flammable materials in large quantities.
- If pyrophoric or reactive materials are exposed to air or moisture, they will react building up heat until they ignite or ignite materials stored close by. Fire may then propagate and escalate.
- Leakage of flammable material from a container can form a flammable atmosphere and this may ignite due to one of the sources of ignition as outlined above. The fire then escalates.

68. Although thought to be less likely, arson has to be considered as a possible cause and Gloucestershire Police and the Fire Service are making enquiries.

FLOODING AND SITE CLEAN UP

Flooding

69. At the height of the November flood, the level reached 10.9m above ordnance datum which meant parts of the site were under 2.4 metres of water. The highest part of the site has a level of 11.2m and was within 0.3m of being flooded. The access road to the site is at a level of 8.5m and floods well before the main site. Flood levels on the site were 0.17m higher during the later December flooding.

70. The impact of the flooding on the incident and its aftermath was significant for a number of reasons. It placed restrictions on the emergency services' ability to fight the fire initially because of the adjacent flooded fields. The potential for materials escaping from the site was increased because of the encroaching floodwater. The flooding of the only access road to the site prevented rapid removal of the "at-risk" materials when the floodwaters continued to rise. The ability of emergency services, site operators and regulatory bodies to carry out investigations was limited because of the access problems. Observation of the site had to be carried out from boats and helicopters.

Clean up

71. Clean up of compound 1 was undertaken by CSG staff, under Agency guidance, prior to the site becoming flooded on Friday 03 November. This was undertaken to prevent the risk of a serious pollution incident occurring.

72. The clean up was carried out in accordance with an anti-pollution works notice issued by the Agency on 02 November. During this clean up, CSG were required to remove from site the following waste:

- mercury bearing waste
- cyanide waste
- highly odorous fire damaged waste as identified by the Agency's Officers
- water-reactive waste (or if not practicable to remove then to move to a level above that of compound 3).

73. CSG were also required to take all practicable steps to clear other waste from Compound 1 to Compound 3, which has greater flood protection.

74. The Agency obtained a commitment from CSG to clear the site of all materials as soon as the floodwater had receded. CSG confirmed in writing their agreement to undertake this work. Following discussion with the Agency and HSE and after CSG engaged the services of a specialist consultant, a full risk assessment to clear the site was drawn up, again by CSG. The work to clear the site is being implemented.

75. The site, in common with much of the flood plain of the River Severn, has been subject to further flooding over the weeks following the incident. However, when access was possible, steps were taken in line with the agreed plan to remove waste substances from the site. Prior to the site again being flooded on 08 December, 400 tonnes of material had been transported from the site leaving 80 tonnes of material still to be removed. The "BSE drums" were the first material moved off-site and were sent for high temperature incineration.

OFF-SITE EFFECTS

People

76. Gloucestershire Health Authority are monitoring the effect of the smoke plume on local residents. This is being led by the Consultant in Communicable Disease Control (CCDC) with assistance from the Chemical Incident Response Service (CIRS), Guy's and St Thomas' Hospital, London. Throughout the initial incident, including the subsequent flooding of the area, a Specialist Registrar in Public Health was seconded from CIRS to support GHA and provided medical input on public health issues to Gold Control.

77. An interim report on the public health response has been prepared by the CCDC and is attached at Appendix 4. This is summarised below.

During the incident

78. On Monday 30 October, local GPs and Accident and Emergency Departments were asked to document any attendees who reported that they had been exposed to smoke from the fire, record their symptoms and to take blood and urine samples for toxicological analysis. Thirteen people, mainly emergency service personnel dealing directly with the fire, were reported as seeking medical advice and samples taken from six cases. These casualties reported symptoms of stinging eyes, sore skin and pain on deep inspiration, which resolved quickly. Reassuringly, no patient required admission to hospital on the day of the fire and all those who attended Accident and Emergency Departments were discharged. The blood tests on those exposed on the day of the fire were subsequently found to be negative for solvents and heavy metals.

Health monitoring

79. On 31 October, the local Accident and Emergency Department and four local GP practices were given details of the incident and asked to report consultations for symptoms related to the incident on a simple form. Subsequently this initiative was extended to all GPs in the county.

80. On 1 November, the CCDC wrote to members of the public in the vicinity of the site. The letter briefly described the incident and efforts being made to manage it, acknowledged that a number of people had complained of symptoms and expressed health concerns and advised on what to do in case of health concerns.

81. On 9 November 2000, the CCDC wrote to all GPs in the county explaining that a number of residents had continued to complain of symptoms. These included sore eyes, sore throat, tingling lips, tight chest, difficulty breathing, headache, nausea, diarrhoea, abdominal pain, and rash. Approximately 130 such reports have been received at the time of writing, including some from NHS Direct. Some of the symptoms complained of are likely to result from exposure to smoke. Others are possibly related to the stress of the incident, or may not be related to the incident at all. The 9 November letter repeated the request to report consultations related to the incident, and gave instructions on how to obtain expert medical toxicology advice.

82. On 14 November, a further brief letter to GPs gave a list of chemicals on the site that Gold Control had already released to the public.

83. A health questionnaire was issued to residents of Sandhurst and two comparison areas on 15 November (with reminders on 29 November) asking them to indicate which of a number of listed symptoms they had the day before the fire and in the ensuing week, and whether they had been flooded. Results are expected to become available progressively in January 2001. This will inform any long-term

monitoring or further studies that might be required. At the time of writing, there is no conclusive evidence of long-term impairment of the health of any member of the public.

84. GHA are considering whether there is any merit in monitoring of routinely available health statistics and in any special monitoring that could be put in place. Any additional proposals will be brought to the CSG Incident Community Response Co-ordinating Group, which includes in its membership representatives of the statutory agencies and the local community

85. Biological monitoring (primarily blood and urine) has also been undertaken on the site employees plus HSE and Agency staff who attended the site both on the day of the incident and subsequently. Results of this sampling have shown no unaccountable raised levels (some arsenic measurements were raised but the arsenic present was shown to be of dietary origin and is not of concern).

ENVIRONMENT

General

86. To assess any possible effects on the environment the area surrounding the site was visited immediately after the incident by the Agency. Air dispersion modelling undertaken by the Agency, together with discussions with local residents and observations made by emergency service personnel, allowed the main area of possible impact to be assessed as up to 4 kilometres between north and north east of the site. The Agency used this information as a basis for determining where sampling needed to be carried out.

87. The initial monitoring of the impact of the incident by the Agency was quickly enhanced by a joint monitoring strategy with TBC which was then superseded by a tripartite monitoring strategy drawn up by GHA, TBC and the Agency (copy of this strategy in Appendix 3).

88. In total, 19 properties have been sampled for a variety of air, sediment and water contaminants since the fire.

89. The monitoring strategies were implemented with all information being passed to GHA as soon as analytical results became available. GHA with both TBC and the Agency's assistance was then able to assess the health implications.

90. Liaison with the Food Standards Agency, Ministry of Agriculture Fisheries and Food and the National Farmers Union has been undertaken to ensure any further monitoring also addresses any of their concerns.

91. There were a number of reports of illness and death amongst wild and farm animals. As a precautionary measure the Food Standards Agency issued advice to local residents and farmers. No ill health in animals has been linked to this incident and the notice has since been withdrawn.

Monitoring results summary

92. The 17,500 tests on the 500 samples of air, water, soils, swabs etc carried out in the local environment beyond the site have shown no significant levels of contamination.

93. The only water contamination of note was restricted to the fire fighting wash-water, which spilled out of the site. This water impacted on an area of approximately 1 acre on the day of the fire immediately adjacent to the site. Within this area, dead worms were observed and analysis has shown elevated levels of contamination including solvents, heavy metals, cyanide and acids. Full details are contained in Appendix 3.

Communication

94. The Agency opened an incident room on the day of the fire which was maintained until 1 December. During that period, HSE and Agency staff continuously manned telephones and provided information to Gold control, TBC, Gloucester City Council, GHA, the media, Government Officers, members of parliament and local councillors. Numerous television interviews, radio interviews, press enquiries and hundreds of calls from members of the public were dealt with. The co-location of HSE and Agency officers for much of the incident was very important and ensured that the CA was able to act in a co-ordinated and mutually supportive role.

95. Local residents were given a very high priority for communication and Agency staff were in contact with residents and their representatives from the start of the incident with a letter being sent to all residents on 2 November. Daily surgeries were held in Sandhurst village from 06 November and a daily question and answer bulletin was produced by the Agency. This was seen to be the main means of communication by all those involved in the incident.

96. On Tuesday 07 November, Sandhurst Parish Council held a public meeting, attended by CSG, the Agency, HSE, emergency services and other bodies in Gold Control. Many local residents questioned the authorities in a forceful and constructive way. Local, national and international media were also in attendance.

HSE AND THE AGENCY INVESTIGATION

97. The Fire Service contacted HSE and the Agency as part of their normal emergency procedures in the early hours of Monday 30 October 2000. Inspectors from the CA (HSE officers based in Birmingham and Agency officers from their Midlands Region) arrived on site at approximately 09.00 to assess the scale of the incident and to brief management within their respective organisations as to the investigation team required. An incident room was set up in the Agency offices at Tewkesbury from 06.00.

98. An on-site investigation team, led by senior officers from both HSE and the Agency, was established on Tuesday 31 October. The multi-disciplinary team included inspectors from the Midlands Region of the Agency and a team from HSE including, specialist inspectors in process safety and electrical engineering and scientific support from the Health and Safety Laboratory (HSL), Sheffield.

99. As well as commencing the investigation, it was important to ensure that the fire-damaged site with its hazardous materials, was made safe and that no actions were taken by CSG to reinstate activities on site until the risks involved had been properly assessed.

100. During the course of the investigation, the CA team:

- carried out a detailed examination and made a photographic record of the scene of the fire;
- took samples of substances at the seat of the fire for analysis at HSL's laboratories;
- interviewed witnesses; and
- examined documents relevant to the site and to CSG management systems.

101. The site investigation had to be halted after 2 days because rising floodwaters cut off access to the site. Access was then not possible by road vehicle until 22 November 2000. The investigation was further delayed by the necessity of dealing with the continuing risk posed to employees of CSG, CA staff and the general public while remedial measures were taken to deal with site flooding.

102. At the time of writing (January 2001), the investigation is still on going. A number of key witnesses including employees, members of the Fire Service and some members of the public have been

interviewed and written statements taken. Further interviews are still to be carried out including the senior management of the company.

103. The COMAH regulations include a requirement for some types of incident to be formally reported to the EU. There are a number of set criteria including the number of people evacuated and for how long. During this incident over 50 people were evacuated for more than 10 hours during the fire on the 30 October. As a consequence, this incident is a defined "major accident" requiring a report to the EU by the CA.

MATHEMATICAL MODELLING OF INCIDENT

104. Specialists from HSE have carried out work using computer-based risk assessment software to estimate the possible major accident consequences of a fire involving toxic and flammable substances on the site. Assessments, which are detailed in Appendix 2, have been completed to provide the following estimates:

- The likely off-site consequences of the incident taking into account what materials were involved in the fire.
- The worst possible off-site consequences of the incident if the full inventory of materials on site had been involved in the fire.

105. Mathematical modelling within HSE is primarily carried out to provide development control advice to planning authorities on the risk in the vicinity of major hazard sites. The harm criterion used is the risk that an individual at a particular place will be exposed to a 'dangerous dose' or worse, whether from toxic gas, heat or explosion overpressure. A dangerous dose is a level of exposure which will cause severe distress to almost everyone, at which many will require medical treatment, some will be seriously injured and highly susceptible people might be killed. It is a substantially higher dose than that which marks the onset of irritation and nuisance and individuals outside of the calculated distance for a dangerous dose may well suffer ill health effects.

106. Information from inventories of the substances believed to be present on site both before and after the fire was used to form a view of the nature and quantity of toxic materials involved in the incident. Consideration was given to the involvement of both the toxic materials in storage and the creation of further toxic materials in the fire.

107. Calculations were carried out using the following worst case scenarios:

- Toxic materials in storage - dispersion of one tonne of pesticide.
- Toxic materials created (or formed) during the fire - production of 30 tonnes of hydrogen chloride from combustion of chlorinated solvents.

108. The conclusion reached was that for both of these worst-case scenarios the plume from the fire was unlikely to have contained material sufficient to give a dangerous dose off-site. The ill health effects observed during/after the fire are discussed by GHA in Section 7 and Appendix 4.

REGULATORY ACTIVITIES

109. The legislation relevant to the site is detailed in Appendix 1. The regulators for health, safety and environment issues are HSE and the Agency respectively. Under waste management licensing legislation, the Agency made frequent site visits to monitor compliance with licence conditions and to react to complaints. Visits by the HSE and the Agency under health and safety legislation and COMAH were less frequent and carried out under an inspection plan. The plan concentrated on ensuring the

operator had appropriate management systems in place and ensured that resources were targeted to risk and proportionate to the lower tier status of the site.

HSE past actions

110. During the past 6 years, HSE inspections and contacts have included:

- 1995: One site inspection plus subsequent telephone discussions.
- 1996: One site inspection undertaken by the site Inspector accompanied by a Principal Inspector. Detailed letter sent requiring improvements.
- 1998: Five site visits plus a visit of CSG management to HSE office and telephone discussions. Visits included routine inspections, visits following the receipt of complaints about working conditions and visits with HSE Specialist Inspectors of process safety and occupational health. During these visits, 2 formal prohibition notices were served (preventing operation of a drum shredder and the small well, both due to fire risks) and 3 formal improvement notices (requiring improvements to the welfare and decontamination facilities on site, the operating procedures for the large well and the laboratory fume cupboard). All notices were subsequently complied with. A detailed report from Specialist Inspectors was prepared and a comprehensive letter sent to CSG requiring other improvements.
- 1999: Two site visits plus three visits of CSG management to HSE office and telephone discussions. Visits included routine inspection accompanied by HSE Specialist Inspectors and a visit following the receipt of a complaint about working conditions. HSE also attended two meetings at TBC. A detailed letter was sent requiring improvements.
- 2000: Formal COMAH notification received by CA on 15 February. Site becomes Lower Tier COMAH and inspection plan prepared.
- 2000: Prior to the incident on 30 October, HSE had made one site visit with CSG management also visiting the HSE office to discuss progress with improvements required. A detailed letter was sent requiring improvements.

HSE internal inquiry

111. An internal examination of the appropriateness of the inspection work carried out prior to the incident has been carried out by a Senior Manager from another HSE division (the Nuclear Safety Division). The terms of reference of this review were: "To review HSE's role in regulating the activities of Cleansing Service Group Limited at its site at Sandhurst Lane, Sandhurst, Gloucester prior to, and with particular reference to, the fire at the premises on the night of 30 October 2000. The review will examine the action HSE took at the site to ensure compliance with appropriate legislation, comparing it with HSE policies, procedures and guidance which are relevant to this class of duty holder."

112. The HSE Internal Inquiry report has been presented separately to this report, but the executive summary is attached as Appendix 7. It concludes that the inspectors exercised their judgement in accordance with HSE's policies and procedures and secured significant improvements in health and safety on the site. It also identifies some learning points about inspection techniques and enforcement options.

Agency past actions

113. The Agency took over the role of Waste Regulation Authority from Gloucestershire County Council in April 1996. During 1996 the Agency undertook a review of licences issued by the County Council and concluded that not only were many of the licences unenforceable, but also significantly sub standard in terms of technical requirements. Details of the Agency's legal review of the licence (and subsequent modifications) issued to CSG is provided in Appendix 5

114. The Agency's Area Office undertook a technical review of all CSG licences and prioritised sites according to risk. The review of the CSG licence was afforded the highest priority. An audit of site operations was undertaken in December 1996 that resulted in an action plan agreed with the company. Amongst other things this resulted in the removal of a large quantity of waste from the transfer station, the immediate implementation of new procedures on waste acceptance, the establishment of technical liaison meetings with the Agency and liaison meetings with representatives of the local community.

115. Following completion of the legal review of the CSG licence a further audit was undertaken in September 1997. The findings of both audits provided the basis for discussing with the company a revised working plan (a description of the way in which activities on site are carried out) and modification of the licence.

116. During 1998 the Agency carried out an extensive consultation with local authorities, HSE and representatives of local communities on the company's revised working plan and the Agency's proposed modification to the licence. A modification to the licence was issued in May 1999 which came into effect in June 1999. Amongst many other things this required the company to employ specialists in risk management to undertake a detailed risk assessment of all operations on the site. The first draft of the risk assessment was received by the Agency in November 1999 and after review this proved to be inadequate. A revised risk assessment was completed in October 2000, and Area staff were due to meet the company to agree an action plan for implementation of its recommendations and modification of the CSG working plan on 02 November 2000.

117. The Agency has a duty under the Environment Protection Act to supervise the activities of licensed waste management sites to ensure that licence conditions are being complied with and such sites are consequently not giving rise to pollution of the environment, harm to human health or detriment to local amenity. This is achieved by regular unannounced inspections and monitoring of the local environment.

118. A summary of the number of inspections is given below along with the number of complaints received, the majority of which have been alleging odour from the site operations.

Year	Inspections	Reported Complaints
1996	29	No data available
1997	74	263
1998	63	40
1999	63	62
2000 (before incident)	43	62

119. The reduction in the number of complaints since 1997 reflects the changes in operational practices implemented as a consequence of the Agency's regulatory activities relating to revision of the working plan and modification of the licence.

120. In December 1997 operations at the site gave rise to a discharge of blue dye which affected properties in the village of Maisemore. This was fully investigated and the Agency sought to prosecute the company. After a number of adjournments the case was due to be heard at Coleford Magistrates on 24 July 2000. Immediately before the hearing the company admitted they had committed an offence and accepted a Formal Caution and agreed to pay the Agency's costs of over £21,000.

121. Following the fire at the site on 30 October the Agency suspended the Company's Waste Licence with effect from 01 November 2000 to the extent that acceptance of waste at the site and certain treatment processes were stopped. The suspension will remain in effect until the site is restored to full compliance with the requirements of the licence. In the meantime all environmental protection controls remain in operation.

122. Since the Agency became responsible for regulating the CSG site great emphasis has been placed on keeping the local communities informed and involved. This has been achieved through the regular liaison meetings with representatives of the local communities and most other regulatory bodies and attendance at Parish Council meetings. In addition there has been extensive consultation on the modification of the licence and information has been provided on the findings of our audits and environmental monitoring.

Agency internal inquiry

123. An internal enquiry has been carried out by Senior Agency staff from other operational Areas. It has concentrated on reviewing three main elements: the special waste process, the permitting process and the compliance assessment process including the management of the incident. The main report has been presented separate to this report and the executive summary is contained in Appendix 7.

Planning Authority

124. Under the Planning (Control of Major Accident Hazard) Regulations 1999, the CSG Sandhurst site was required, from April 1999, to have hazardous substance consent for the presence of hazardous substances in an amount at, or above, the specified controlled quantity. Gloucestershire County Council, the Hazardous Substance Authority, has not received an application for hazardous substance consent from CSG. The Council are considering the implications of the lack of hazardous substance consent, although as yet evidence has not been established that there has been a breach of hazardous substances control. Full details of hazardous consent issues are contained in Appendix 1.

FURTHER INVESTIGATION AND CONCLUSION

Legal considerations

125. It is premature at this stage of the investigation to provide detailed information on possible breaches of legal requirements and the likelihood of legal proceedings arising from this incident. However, the investigation will concentrate on establishing whether CSG have complied with their legal obligations particularly under the statutory requirements listed below. If there is evidence of contravention, action will be taken in accordance with the published HSE and the Agency enforcement policy.

The statutory requirements being considered are:

COMAH Regulations 1999

- The operator has to take all necessary measures to prevent major accidents to persons and the environment.

Environmental Protection Act 1990

- Regulates the deposit, keeping, treatment and disposal of controlled waste to ensure that it does not cause pollution of the environment or harm to human health.
- Requires certain waste management activities to have a waste management licence which must be operated by fit and proper persons.
- Imposes a duty of care on waste producers to ensure that waste is disposed of correctly.

The Special Waste Regulations 1996

- Control the movement of all special wastes including movements to and from storage, treatment and recycling facilities and movements to final disposal routes.
- Generally, all consignments of special waste have to be pre-notified to the Agency at least three days before the movement.

Planning (Hazardous Substances) Act 1990

- Hazardous substance is present at or above the controlled quantity without hazardous substance consent. (Enforced by Gloucestershire County Council as the Planning Authority)

Emerging Lessons

126. It is likely that the investigation will reveal a number of areas where practice within the chemical waste handling and treatment industry will need to be reviewed.

127. The HSE and the Agency will take action to ensure that the hazardous waste industry learns the lessons from this incident and carries out any necessary improvements.

128. The impact of flooding on sites may have to be reassessed in light of the changing climate and increased risks of flooding. The relationship with other regulations and in particular the planning requirements should be reviewed.

129. The recent Integrated Pollution Prevention Control Regulations will require installations like the CSG site to apply for a permit in 2005. IPPC provides for a high level of protection of the environment as a whole through the application of "best available techniques". It also requires the operator to take necessary measures to prevent accidents and limit their consequences. The feasibility of achieving an earlier entry to the IPPC regime for this and similar sites should be reviewed.

APPENDIX 1 - LEGAL SUMMARY

The Agency

130. Legislation for which the Agency is the enforcing authority:

Environmental Protection Act 1990 Sections 33, 34 and 71

- Part II of the Act is the main legislation that regulates the deposit, keeping, treatment and disposal of controlled waste to ensure that it does not cause pollution of the environment or harm to human health. It requires certain waste management activities to have a waste management licence which must be operated by fit and proper persons. It imposes a duty of care on waste producers to ensure that waste is disposed of correctly.

The Special Waste Regulations 1996 Section 18

- These regulations control the movement of all special wastes including movements to and from storage, treatment and recycling facilities and movements to final disposal routes. Generally, all consignments of special waste have to be pre-notified to the Agency at least three days before the movement.

Water Resources Act 1991 Section 85

- This legislation is concerned with maintaining and enhancing the quality of controlled waters and in particular it is an offence to cause or knowingly permit any poisonous, noxious or polluting matter to enter controlled waters. Notices can be served under this legislation to require a person to carry out work to prevent pollution affecting controlled waters.

Water Industry Act 1991.

- Where it is proposed to discharge any red list substance to trade sewer an authorisation is required from Agency. This allows Agency to ensure that discharges to controlled waters via the sewage system are controlled.

HSE

131. Legislation for which the HSE is the enforcing authority:

Health and safety at work etc Act 1974 (HSW)

- The Principal Act applying to almost all work places which includes a duty on employers to take all reasonably practicable measures to ensure the health, safety and welfare of employees, including the provision of safe systems of work, training, supervision etc. The Act also includes a duty on employers to take all reasonably practicable measures to protect non-employees (contractors, local residents, other businesses etc).

Management of health and safety at work Regulations 1992 (as amended) (MHSW)

- Important regulations which make specific the underlying spirit of the Act (above). Amongst the duties under these regulations are the requirements for employers to conduct risk assessments of their work activities, to have arrangements in place for the effective planning, organising,

control and monitoring of work activities and to appoint a competent person to assist with complying with health and safety duties.

Competent Authority

132. Legislation for which HSE and the Agency are the enforcing authority acting jointly as the Competent Authority:

Control of major accident hazard Regulations 1999 (COMAH)

- Recently introduced, in April 1999, regulations which modernise earlier requirements, with the aim of preventing major accidents involving dangerous substances and limiting the consequences to people and the environment from any which do occur. Application is at two levels depending on the inventory of dangerous substances, with "lower tier" sites, such as the CSG Sandhurst site, being required to take all necessary measures to prevent major accidents and to prepare a major accident prevention policy (MAPP) stating how the site is to achieve this goal and the measures in place to do so. The duties for Top and Lower Tier sites are set out below.

COMAH Lower Tier duties

- Formally notify the CA of the application of COMAH
- Take all necessary measures to prevent major accidents
- Prepare a written Major Accident Prevention Policy

COMAH Top Tier duties

In addition to the duties for the Lower Tier sites:

- Prepare and submit to the CA a safety report
- Prepare a formal on and off-site emergency plan
- Provide information to the public, the CA and other establishments

Gloucestershire County Council

Planning (Control of Major Accident Hazards) Regulations 1999

133. Associated with the COMAH regulations are planning controls to prevent new major hazard sites being sited in unsuitable locations and to prevent inappropriate developments around existing ones. These requirements, which amend exiting planning regulations, have been implemented as the Planning (Control of Major Accident Hazards) Regulations 1999 and, because of the wider development issues associated with planning matters and their integration with general planning legislation, are enforced by the relevant Local Authority, which for CSG at Sandhurst is Gloucestershire County Council. Further details on these regulations can be found in the DETR Circular 04/2000.

134. One of the requirements of the P(COMAH) 1999 Regulations is that all major hazard sites to which COMAH applies must obtain consent for the presence on the site of hazardous substances in an amount above a specified controlled quantity. This consent requirement gives the hazardous substance authority the opportunity to consider whether the proposed storage or use of the dangerous substance is appropriate in a particular location, having regard to the risks arising to persons in the surrounding area and to the environment. The HSE and the Agency must be consulted on any consent application which, if granted, will result in a consultation zone around the site within which any future proposed developments must be considered for possible effects on public safety and the environment.

135. As part of the transitional arrangements for the regulations, there was a six month period following the implementation when new entrant sites could submit a claim for deemed consent based on established presence. Any applications received after this date would be subjected to the normal, detailed, assessment conditions and the application could be refused.

APPENDIX 2 -DETAILS OF INCIDENT MODELLING

136. The Methodology and Standards Development Unit of HSE has carried out mathematical modelling to estimate the consequences of a fire involving toxic and flammable substances on the CSG site. The assessments have been carried out using computer-based risk assessment software.

137. The inventories of substances believed to have been present on the site both before and after the fire have been examined in order to form a view on the likely nature and quantities of toxic material that were present in the fire plume. Both the involvement of toxic materials that were in storage, and the creation of toxic materials by combustion or pyrolysis were considered.

Toxic materials in storage

138. The site had in storage a few tonnes of mixed agrochemicals, including pesticides, but that they were not all involved in the fire. The only pesticide named explicitly in the inventories is Dichlorvos. Although not on the site, the worst possible pesticide would be Paraquat. Calculations were carried out on the downwind dispersion of Dichlorvos (and separately Paraquat as an exemplar of the most toxic pesticide), assuming 1 tonne of it being caught up in the fire plume and blown off-site. Wind speed is important in dispersion modelling and was taken in the range 40 to 50 mph, as measured on the site at the time.

139. Results are obtained in terms of HSE's "dangerous dose" criterion. This is the dose that HSE uses in its consideration of the acute consequences of single exposures to toxic material in the context of major accidents. It is a dose that would cause severe distress to all persons suffering it and could result in highly susceptible people being killed. It can therefore be considered as close to the threshold of fatalities. It is a substantially higher dose than that which marks the onset of irritation or nuisance.

140. The calculations for Dichlorvos show that the HSE dangerous dose is not exceeded beyond the site boundary. This applies even if it is assumed that 100% of the Dichlorvos survives the fire; usually less than 10% of a pesticide caught in a fire survives it. Calculations with Paraquat also show that the HSE dangerous dose is not exceeded beyond the site boundary.

Toxic materials created by combustion or pyrolysis

141. With regard to the products of combustion and pyrolysis, it was considered that the main toxic risk was posed by the decomposition of various chlorinated aliphatic solvents, especially trichloroethylene and methylene chloride, which it was estimated may have led to the production of around 30 tonnes of hydrogen chloride gas. To put this quantity into some sort of context it should be noted that hydrogen chloride when stored as a liquefied gas is a "named" dangerous substance in the COMAH Regulations with lower tier and top tier qualifying quantities of 25 tonnes and 250 tonnes respectively.

142. The downwind consequences of releasing 30 tonnes of hydrogen chloride into the hot plume were calculated. It was found that the HSE dangerous dose is not exceeded beyond the site boundary.

143. The quantity of hydrogen chloride would have to be four times greater than the best estimate of 30 tonnes to give an HSE dangerous dose beyond the site boundary. If, say, ten times the best estimate quantity of 30 tonnes had been released into the fire plume, then a person who remained in the open air some 500 metres downwind of the fire would have received the HSE dangerous dose. However, a person inside a typical house at this distance would not receive the dangerous dose.

144. The fire occurred at night-time, with very bad weather and very high wind speeds. "Night-time" and "very bad weather" are advantageous as they mean that very few people would be out of doors in this remote vicinity at the time of the incident. "Very high wind speeds" are partly advantageous, insofar that

they introduce a lot of air into the plume and dilute it rapidly. However, they are disadvantageous in that they overcome the buoyancy of the plume that would otherwise lift it high above people's heads. The best estimate calculations have been run in typical daytime and typical night-time weather. Calculations have also been carried out using the worst-case wind speed which would keep the plume near to the ground without diluting it too quickly. In no case have we obtained an HSE dangerous dose beyond the site boundary.

Conclusion

145. On the basis of the information obtained of the materials that were on-site at the time of the fire, it was concluded that the plume was unlikely to have contained toxic material sufficient to give an HSE dangerous dose off-site.

APPENDIX 3 - SAMPLING DETAILS

Summary

146. Monitoring results have been collated and made available to all interested parties. The Agency has arranged for AEA Technology to undertake an independent review of the monitoring results to assess any environmental effects. This report will present all the monitoring results and comment on the environmental significance of the levels found.

147. During subsequent flooding events, monitoring was again undertaken of floodwaters to assess possible impact. During the clear up of the site, air samplers are in place to provide environmental monitoring.

148. Liaison with the Food Standards Agency, MAFF and the NFU has been undertaken to ensure any further monitoring also addresses any of their concerns.

Waters

149. To date, a total of 103 water samples have been taken and analysed for a range of contaminants such as: solvents, pH, mercury, arsenic, selenium, other heavy metals, cyanide, sulphide and dioxins. The total number of individual parameters tested for is in excess of 10,000. Most of these were done by the Agency laboratories.

150. Monitoring to date indicates that the only significant water contamination was restricted to the fire fighting water, which spilled out of the site. This water impacted on an area of approximately 1 acre on the day of the fire immediately adjacent to the site. Within this area, dead worms were observed and analysis has shown elevated levels of contamination including solvents, heavy metals, cyanide and a low pH.

151. Extensive sampling of floodwaters around the site and within properties over the weeks following the incident indicates that no significant contamination has migrated off site. Although a small quantity of diesel oil has been observed to escape from the site, this is not considered significant.

Air

152. To date, a total of over 350 air samples have been collected; they have been analysed for either Volatile Organic Compounds (VOCs) or metals. The total number of parameters tested for is in excess of 5000.

153. Air monitoring results within properties have been passed to Gloucester Health Authority and Dr Virginia Murray, the Director of the Chemical Incident Response Service. They have with Tewkesbury Borough Council and the Agency's assistance produced individual reports for the 13 properties highlighted by Gold Control. The results obtained were within those expected for normal domestic air: it should be noted that research in this area is very sparse. The Agency is collating further longer-term air monitoring results from 6 other properties and ambient air samples from around the site which will again be passed to GHA.

Soils/sediments

154. To date, over 40 soil/sediment samples have been obtained. These have been analysed for cyanide, total metals, solvents, dioxins and other organic compounds. The total number of parameters tested for is in excess of 2000.

155. Results obtained indicate no significant contamination of properties as a result of the fire. Elevated levels of aluminium and iron were found in the sediments from the houses sampled. However, similar samples taken from flooded properties not affected by the fire have shown similar elevated levels.

156. All soil sample results to date do not indicate any materials above expected background levels.

Others

157. Over 10 swab samples from properties have been taken (to look for particulate pollution). These have been analysed for cyanide, total metals, solvents, dioxins and other organic compounds. The total number of parameters tested for is in excess of 400.

158. Samples of dust and thatch from properties have been obtained and analysed.

159. Results from dust samples to date do not indicate any contamination above background levels.

Summary of environmental sampling strategy

Objective of Strategy

160. The aim of the Environmental Sampling Strategy agreed with Gold Control for properties within the evacuation area around the CSG site Sandhurst was to enable people to return to their homes as soon as is practicable and to ensure that the internal environment of residential accommodation was clear of any residual pollutants which may have arisen from the CSG site in flood waters or air.

Sampling Strategies

161. 18 properties were identified to have air, dust, water samples or a combination thereof taken, within the area around Sandhurst. In addition sampling for controls and other environmental reasons was also carried out.

Air Sampling

162. The air sampling strategy focused on the identification of residual, gaseous and particulate contaminants, which may have been associated with the original incident and any fugitive, gaseous contaminants resulting from subsequent alleged site events. Grab Air Bag sampling techniques were initially used to identify species of pollutants and then real-time analysers to try and determine quantities of species identified. A control sampling point was established.

163. The chemical species identified in grab samples gave results commensurate with known stored items at CSG. Some of the species identified are also normally found within residential accommodation.

Water Sampling

164. The water sampling strategy initially focused on floodwaters around the CSG site. Later water samples obtained from flooded houses as well indicated no cause for concern.

Sampling Strategy

Air

165. A number of selected properties and controls were sampled internally using continuous, pumped air samplers. Further selected properties had internal samples taken using passive tubes.

- The highest priority for sampling was for occupied properties.
- The continuous pumped samplers were located in flooded properties, once floodwaters began to recede, subject to the permission of the occupiers. The flooded property used as a control continued to be monitored.
- Properties of concern but not flooded were sampled either by passive tube for 24 hours or pumped sampler for 6-8 hours. The exact periods were determined following discussion with AEA (specialist contractor).

Water

- Floodwater samples from the immediate environs of the CSG were taken daily.
- Sampling of floodwater within properties was undertaken from 10 November.

Sediment Sampling

- Sediment samples, where present, were obtained from flooded properties (including the control), once the water receded.

Precautions

166. Sampling undertaken in flooded properties had to have careful regard to health and safety requirements. The occupier's permission had to be obtained before entry.

APPENDIX 4 - REPORT FROM GLOUCESTERSHIRE HEALTH AUTHORITY

THE INCIDENT

167. On the morning of the incident, Monday 30 October 2000, the Consultant in Communicable Disease Control (CCDC) and the on-call Consultant in Public Health Medicine were notified of the incident by a consultant of the Chemical Incident Response Service (CIRS), Guy's and St Thomas' Hospital, London. They conferred and agreed that the former would attend Bronze Control at the Globe Inn near the site. The latter would proceed to the Health Authority headquarters immediately. This was in order that somebody would be present in the Department of Public Health to give any assistance requiring resources in the department as soon as possible.

168. The CCDC obtained a briefing at Bronze Control, attended the site, and then went to the Health Authority to brief colleagues. He then joined colleagues from other agencies in Gold Control in Cheltenham, which had been convened by the police at 9.30 a.m.

169. On the evening of Tuesday 31 October 2000 the CCDC was advised by the County Council's Emergency Planning Officer that a significant number of residents were phoning the Environment Agency and complaining of feeling ill.

170. On Wednesday 1 November 2000 the CCDC met at the Environment Agency with a medical toxicology consultant from the Chemical Incident Response Service

171. Additional problems occurred as the CSG site was flooded by the River Severn on 4 November 2000, complicating the clean-up and causing concern about the need to evacuate any household in the flood area if a further fire should occur. The Fire Service was concerned that they would be unable to fight a further fire on the site if the surrounding area were flooded.

THE PUBLIC HEALTH RESPONSE

Communications with GPs and Other Health Professionals

172. On Monday 30 October, a Specialist Registrar in Public Health, working at Gold Control, who was seconded from CIRS to support the Health Authority, contacted local GPs and Accident and Emergency Departments. He asked these agencies to document any attendees who reported that they had been exposed to the smoke from the fire, record their symptoms and to take blood and urine samples for toxicological analysis. Thirteen people were reported as seeking medical advice and samples were taken from six cases. Reassuringly, no patient required admission to hospital on the day of the fire and all were discharged from Accident and Emergency Departments.

173. On Tuesday 31 October 2000, the CCDC wrote to local accident and emergency departments and four GP practices believed at the time to be looking after most of the Sandhurst population. The letter briefly described the incident, and explained that 13 people, mainly services personnel, had attended accident and emergency departments. These casualties reported symptoms of stinging eyes, sore skin and pain on deep inspiration, which had resolved quickly. The letter indicated that serious health problems appeared to be unlikely but asked GPs to report any patients consulting because of symptoms they believed were due to the fire. This letter confirmed telephone calls already made on the CCDC's behalf to the Accident and Emergency Departments and the four general practices.

174. On Thursday 2 November 2000, the CCDC wrote to all GPs in the county explaining that a number of Sandhurst residents had started complaining of symptoms and an unpleasant odour from the site on Tuesday 31 October. The letter explained that some symptoms might be related to chemical odours possibly resulting from the site clean up. It explained that efforts were being made to secure the site, and briefly outlined the sampling strategy. It mentioned that people exposed to the plume on the day of the fire were most likely to be affected, and indicated that asthmatics might experience exacerbation. It asked for GPs to report consultations for symptoms related to the incident on a simple form.

175. On Thursday 9 November 2000, the CCDC wrote to all GPs in the county explaining that a number of residents had continued to complain of symptoms. Preliminary results of environmental samples had yielded no evidence of significant contamination. Blood tests on those exposed on the day of the fire had been negative for solvents and heavy metals. The letter repeated the request to report consultations related to the incident, and gave instructions on how to obtain expert medical toxicology advice and teratology advice.

176. On 14 November 2000, a further brief letter to GPs gave a list of chemicals on the site that the Environment Agency had already released to the public.

Communications with the Public.

177. On 1 November 2000, the CCDC wrote to members of the public in an area bounded by the following roads: A417, B4211, B4213, A38, A4019, M5, and A40. This area had been subject to a precautionary notice by the Foods Standards Agency as described in a press release. The letter briefly described the incident and efforts being made to manage it; acknowledged that a number of people had complained of symptoms and expressed health concerns; and advised on what to do in case of health concerns. This included advice to members of the public to ring NHS Direct in the first instance if they had health concerns. NHS Direct staff were asked to complete a report form for the Health Authority which was similar to that in use by the GPs.

178. On Saturday 4 November 2000, the CCDC, an officer of the Agency, and an officer of Tewkesbury Borough Council attended a meeting of residents in Sandhurst Village Hall during which somewhat critical observations of the Health Authority's performance were made.

179. On Tuesday 7 November, the Director of Public Health addressed a public meeting convened by the Parish Council at which similar views were expressed.

180. Following this meeting, arrangements were made for "drop-in" sessions to take place at Sandhurst Village Hall. Initially there were two two-hour sessions each weekday and one on Saturdays and Sundays, with officers of the Health Authority, Tewkesbury Borough Council, and the Agency in attendance. At the time of writing, following a review of the need for this centre, there are now only two one-hour sessions a week, both attended by the Agency and the Borough Council, with the Health Authority in attendance at one of them. Written briefings in the form of a "Question & Answer" sheet are produced on the day of a drop-in session.

181. On Friday 1 December 2000, the CCDC wrote to the householders of five addresses from which occupants had been evacuated on Sunday 5 November. This letter gave each householder results of sampling of air, flood water and silt removed from the house. It was accompanied by a commentary on health implications agreed with the Agency, Tewkesbury Borough Council, and the Health Authority's legal advisers. The letters advised in each case that there were no findings indicative of any health hazard. Similar letters are being drafted for a sixth property, a further six houses and one public house (the Globe Inn) from which only air samples were taken, and a number of properties subject to long term air monitoring.

182. A CSG Incident Community Response Co-ordinating Group has been established consisting of representatives of the statutory agencies and two community representatives. It is to review all information relating to the environmental impact and the health of the population affected, and to consider how to disseminate this information. It met for the first time on 14 November 2000.

Health Monitoring

183. One hundred and twenty four reports on consultations have been received from GPs and NHS Direct.

184. A health questionnaire was issued to residents of Sandhurst on Wednesday 15 November 2000 (with reminders on 29 November) asking them to indicate which of a number of listed symptoms they had the day before the fire and in the ensuing week, and whether they had been flooded. Results are expected to start to become available in early January 2001. This will inform any long-term monitoring or further studies that might be required.

185. Health Authority staff intend to discuss at a meeting on 13 December 2000 what merit there may be in monitoring of routinely available health statistics and in any special monitoring that could be put in place. Any additional proposals will be brought to the CSG Incident Community Response Co-ordinating Group.

APPENDIX 5 -LICENSING ISSUES

186. The legislative framework for the regulation of the Cleansing Service Group (Treatment & Disposal) Ltd site at Upper Parting was initially Part I of the Control of Pollution Act 1974 (CoPA) and then, since 1994, Part II of the Environmental Protection Act 1990 (EPA). Both Acts were broadly similar though the latter required licence holders to be Fit and Proper Persons and for formal application procedures for the surrender of licences.

The Control of Pollution Act

187. Under CoPA, an application for a disposal licence would be granted if:

- planning permission (if required) had been granted
- activities would not cause pollution of water or harm to human health.

188. The disposal licence for the Upper Parting Site was issued by the Disposal Authority, Gloucestershire County Council on 13 June 1978.

189. A disposal licence could be modified on the application of the holder or if the Disposal Authority thought it desirable and no unreasonable expense would be incurred by the licence holder.

190. In many cases, the Gloucestershire Waste Regulation Authority effected a modification by issuing additional licences, by letter, or by providing amended pages to licences. In addition, statutory consultation did not take place on a number of licence modifications.

The Environmental Protection Act 1990

191. 1 May 1994 saw the implementation of the licensing provisions of EPA. Most disposal licences (including CSG) automatically became waste management licences. However Gloucestershire WRA provided all existing waste disposal licence holders with a further licence in waste management licence format, in error.

192. Waste management licences issued under the EPA require that the management of sites must be in the hands of a Technically Competent Management. The Plant Manager for CSG holds the appropriate Certificates of Technical Competence in Managing Special Waste Transfer Operations and Managing Special Waste Treatment Operations. A further four personnel hold deemed competence as they were part of the management of the site under CoPA.

193. Licences are subject to terms and conditions. The latter can be modified, on the application of the licence holder or if the Agency considers that it is desirable and is unlikely to cause unreasonable expense to the holder. Conditions must be reasonable, that is: necessary, unambiguous, comprehensive and enforceable.

194. Of the five modifications to the licence by Gloucestershire Waste Regulation Authority, none were fully compliant with the law. These irregularities by the Waste Regulation Authority led to confusion as to what was the valid licence (as modified, transferred or amended), for the site. The Agency conducted a legal review and issued a modification to the licence on 1 September 1997 that replaced all of the previous 'modifications'.

195. Following a technical review of the licence, a complete revision of the conditions was effected by a modification of the licence on 21 May 1999 which came into force in June 1999.

Enforcement at Waste Management Facilities such as CSG

Prosecution

196. Licensed operations can be enforced by prosecution under section 33 EPA if a person:

- deposits controlled waste in or on any land unless the deposit is in accordance with the licence.
- treats, keeps or disposes of controlled waste in or on any land
- treats, keeps or disposes of controlled waste in a manner likely to cause pollution of the environment or harm to human health.

197. Breach of licence conditions is also an offence under section 33.

Enforced modifications, revocations and suspensions of waste management licences

198. The Agency must modify the licence conditions to ensure that activities do not cause pollution of the environment or harm to human health or become seriously detrimental to the amenities of the locality, except where it revokes the licence.

199. The Agency also has power to suspend, partially revoke or revoke a licence entirely.

200. The Agency may revoke or partially revoke a licence if;

- the holder of the licence has been convicted of a relevant offence, or
- the continuation of the licensed activities would cause pollution, harm or serious detriment and these cannot be avoided by modifying the licence conditions.

201. If the management of the activities has ceased to be in the hands of a technically competent person, then the Agency may partially revoke the licence or suspend the licence (or parts of it).

202. If serious pollution of the environment or serious harm to human health has resulted from, or is about to be caused by, the licensed then the Agency may suspend the licence (or parts of it).

203. A licence may also be suspended, revoked or partially revoked under section 42.

Section 42

204. If a licence condition is not being complied with, or is not likely to be complied with, the Agency can serve a Notice on a licence holder requiring him to take steps to remedy, or prevent, the non-compliance within a specified period.

205. If the holder of the licence fails to comply with such a Notice the Agency may:

- partially revoke the licence
- revoke the licence
- suspend the activities to which the licence relates or, as the case may be, any of those activities so specified.

Section 59

206. Where waste has been deposited in breach of section 33 of EPA, a Notice may be served which requires the:-

- removal of the waste from the land; and/or

- steps to be taken to eliminate or reduce the consequences of the deposit.

THE LEGAL REVIEW OF THE CSG LICENCE

Licence History

207. 13 June 1978: Cleansing Service Group (Treatment and Disposal) Ltd was issued with a waste disposal licence under CoPA.

208. 26 October 1981: condition 5 of the licence was modified. The modification was effected by issuing an amended page 2 of the schedule of conditions instead of a notice of modification. The effect of this modification was to permit the acceptance of hydrochloric acid, sulphuric acid and nitric acid.

209. 18 October 1982: the licence was modified. A further waste disposal licence was issued instead of a notice of modification. The effect of this modification was to permit the acceptance and temporary storage of up to 1000 gallons of solvents and required suitable storage facilities for the solvents.

210. 23 May 1989: the licence was modified. The modification was effected by issuing amended pages 2 and 3 of the schedule of conditions instead of a notice of modification. The effect of this modification was to permit the acceptance of acidic soot from combustion processes at the site.

211. 22 August 1991: the licence was modified. A further disposal licence was issued instead of a notice of modification. This was a substantial modification that replaced all the conditions of the licence and significantly extended the range and quantity of material acceptable for treatment and/or transfer at the site.

212. On this occasion, the County Planning Officer was consulted and he stated that the works described in the application could be considered to be incidental to the existing use and, at that point in time would not require a separate planning permission. He also stated that any future increase in transfer activities could be material and may require a formal planning application.

213. 1 May 1994: a further licence in waste management licence format was issued. This licence contained different conditions from the disposal licence, however statutory consultation did not take place on the modifications. The modification permitted a small number of additional waste types to be accepted for transfer and/or treatment at the site.

The Legal Review

214. The Agency drafted a notice of modification under section 37(1)(a) of EPA that included all the modifications referred to in points 2, 3, 4, 5 and 6 above. The licence holder, planning authority and the HSE were consulted on the proposed modifications.

215. HSE responded to the consultation with a comment that condition 67 relating to personal protective clothing imposed by the modification dated 22 August 1991 was a reasonable condition, but one which was more appropriate for the HSE to control. They requested that the Agency avoid imposing similar conditions in the future.

216. Gloucestershire County Planning Authority objected to the grant of the legal review modification if the site was to accept any materials other than those granted by the conditions of the planning consent Ref: TG.6154/A. This consent permitted the treatment of waste oils and oily wastes. This response significantly differed from that received as a result of the consultation previously undertaken by Gloucestershire WRA on the application effected by the modification dated 22 August 1991. At that time the planning authority had effectively stated the changes were within the terms of the planning consent.

217. A further modification, dated 1 May 1994 increased the types of waste permitted at the site and did not increase the quantity of waste that could be accepted.

218. After consideration of the comments received from the Planning Authority in response to the original modification application in 1991 and the legal review consultation, it was decided that the modification of 1 May 1994 did not significantly expand operations on the site. In light of this and in line with its 'no-detriment' approach the Agency issued the legal review notice of modification on 4 September 1997 to give clear expression and appropriate effect to those changes to the licence which Gloucestershire County Council had irregularly imposed in the preceding years.

APPENDIX 6 - PLANNING HISTORY

219. The CSG site was originally built in the 1860's as a Tar distillations works and operated as such under several ownerships until 1972.

220. In 1973, CSG moved into the site and started using it as an oil separation unit to which oily waste could be brought for treatment. The process involved the removal of oil from liquid oily wastes to be used as fuel to continue the separation process or to be recycled for further use. The process was concerned not only with waste oil to be recycled with the primary objective of collecting recovered oil but also to provide a disposal service more generally for oily wastes. In 1974 the site was capable of handling 25,000 gallons of oil per week.

221. Oil waste came primarily from industry, including machine tools and storage tanks.

222. CSG applied for an Established Use Certificate for the use of the site for the treatment of waste oils. This was refused by Tewkesbury Borough Council on 26 January 1976.

223. After this, Gloucestershire County Council assumed responsibility as the Waste Planning Authority for the site and, in January 1977, a planning application was submitted to the Council by CSG for the use of the site for the 'treatment of waste oils and oily wastes'. There were no objections from statutory consultees to the application and Planning Permission (Ref TG6154/A) was granted on 17 January 1978. Detailed operational conditions were not included in the Planning Permission because it was considered that control of the day to day working of the site would be effected through the Waste Disposal Licence.

224. This permission was, and continues to be, the main planning permission covering operations on the site. It included a condition restricting the change of use from a tar works to a plant for the treatment of waste oils and oily wastes, and for no other purpose including any activity in Classes III and IV of the Town and Country Planning (Use Classes) Order 1972. Notwithstanding this, CSG approached Gloucestershire County Council in 1991 about developing the use of the site for the ancillary treatment and transfer of waste chemicals. On the basis of information supplied at the time, the County Council agreed that the additional activities were ancillary and did not require the submission of a further application for planning permission. The site has continued to operate on this basis since then although the County Council is investigating whether there has been a breach of planning control by virtue of a substantive material change of use.

225. Two other Planning Permissions were approved after the grant of the 1978 planning permission for related infrastructure, although neither of these concerns the fundamental use of the site.

226. The first of these was for the construction of storage tanks, retention of a centrifuge house and retention of an oil screening house. The Permission was granted by GCC on 18 June 1982 (Ref TG/6154/C).

227. The other Planning Permission (Ref. 91G/6154/01/02) was granted on 18 January 1992 for the erection of a pumping station at Upper Parting Works and rising main in Sandhurst Lane.

APPENDIX 7 - EXECUTIVE SUMMARY OF INTERNAL REPORTS

HSE

228. HSE has a framework of policies, procedures and guidance within which inspectors exercise their judgement as to the level and nature of regulatory interventions with duty holders. Inspectors for the CSG site operated within that framework in that they:

- targeted significant resource at the site in recognition of the hazards, risks and poor performance of the company;
- provided advice on deficiencies and, when the seriousness of the risks was apparent, took formal enforcement action on the most serious matters;
- recognised that continued regulatory oversight was needed to maintain progress on improvements after the formal enforcement;
- responded to complaints made about the company by employees and members of the public in an appropriate way;
- liaised appropriately with other regulators to co-ordinate action and avoid placing conflicting requirements on the company;
- consulted employees about health and safety standards on site.

229. In all cases, the inspectors considered appropriate courses of action and made rational choices which they felt best suited the circumstances. This led, ultimately, to deficiencies being revealed and action taken which resulted in the site making many improvements in health and safety standards from 1998 to October 2000. But we reflected on whether alternative courses of action might have given better results.

230. Up until formal enforcement in 1998, HSE had been visiting the site and making recommendations about conditions, but without having the desired effect in terms of the pace or nature of improvements. The emphasis in HSE's recommendations was on physical conditions and it might have been appropriate to have raised concerns formally with management about its ability to identify and control risks adequately. It was right to secure improvements to workplace conditions because inadequacies in these would have directly threatened health and safety. However, there was a need to ensure that management had the right systems in place to manage risks on an ongoing basis.

231. This leads to a second point. It was clear after a visit in 1998 that there were serious and deep rooted concerns about management. It might then have been useful to have registered these concerns with the most senior management of the CSG group of companies. This might have resulted in the improvements in management attitude which the inspectors had considered to be necessary. We noted that approaching a central headquarters where this was in a different region and regulated by a different HSE directorate was complicated and this might be something for further examination by HSE. We also note that Hazardous Installations Directorate (HID) is developing the "Lead Inspector" system, the purpose of which is to provide a co-ordinated approach to regulation of Control of Major Accident Hazard Regulations 1999 (COMAH) Top Tier multi-site companies, and consideration might be given to how this principle could be extended to cover other multi-site companies.

232. A further point concerns the enforcement action taken after the 1998 visit. We are convinced that serving prohibition and improvement notices was right in that it tackled some serious and imminent risks. Furthermore, they provided a springboard for further improvement programmes. However, prosecution, in addition to the notices, may have been appropriate at this stage given the fact that the company management had been less than frank in describing some of their more dangerous operations to inspectors at previous visits. We do, however, note the decision on the merits of prosecution was finely balanced. The inspectors' view, that prosecution on top of the notices would have demotivated site management, is understandable. We note that HSE is now finalising an enforcement management

model which will aid future proportionality and consistency of inspectors' judgements on enforcement action.

233. HID's experience with regulating the CSG site raises questions about standards in the waste processing sector generally. HSE may wish to consider, in the light of its other priorities, whether a strategic inspection initiative targeting this sector is appropriate.

The Agency

234. Following the major fire at Cleansing Service Group ("CSG"), Sandhurst, Gloucestershire on 30th October 2000, the Environment Agency ("The Agency") was asked to prepare a report for the Deputy Prime Minister, reviewing its performance in dealing with the CSG site. The report was to concentrate on the way it carries out its regulatory responsibilities, and the way it responded to this major incident.

235. The Agency established a review team in response to the request from the Deputy Prime Minister. It has reviewed the Agency's performance and its findings are presented in this report.

236. This report is concerned solely with the Agency's role in regulating the CSG site and its response to the incident itself. A separate report into the incident is being prepared jointly by the Agency and the Health and Safety Executive as joint competent bodies under the Control of Major Accident Hazards (COMAH) Regulations.

237. In reviewing the Agency's role in regulating the CSG site, the review team has looked at four components of the regulatory role:

- waste management site licensing;
- licence compliance assessment;
- regulation of special waste;
- enforcement of licence conditions.

238. On licensing, the report concludes that the modified licence, effective from June 1999, sets a reasonable standard of control with necessary and enforceable conditions. The report also suggests technical improvements to the licence conditions and to the site working plan which could be made by the Agency. By the time of the incident CSG had failed to satisfy the Agency in its risk management proposals which led to delays in finalising the working plan and implementing monitoring programmes.

239. On compliance assessment, the report has looked at the number of inspections carried out by Agency officers and concludes that the frequency of inspections is consistent with Agency national guidance. In analysing compliance with licence conditions, the report notes that site inspections have identified a number of breaches of conditions, with the largest number relating to odours and site security.

240. On special waste, the report concludes that compliance with national processes and procedures is good. However, certain issues have been identified which will be included in the national review of special waste currently being undertaken. In respect of the solvents contaminated with BSE discovered on site, the report notes the difficulty in classifying consignments of this sort and the need for Agency guidance in handling such materials.

241. On enforcement, the report concludes that Area officers have given priority to putting in place an enforceable licence by which CSG's performance can be properly measured. However, given the number of breaches in licence conditions identified in site inspection reports, the review team would have expected also to have seen formal enforcement action in place. Formal enforcement action was taken against CSG in relation to an incident in December 1997 which resulted in a formal caution.

242. In drawing conclusions on how regulation on the site might be improved, the report points to the need to complete the licensing process including suggested amendments and for the balance of regulatory activity to include more focus on enforcement. There is no evidence that a different approach to any of the Agency's regulatory responsibilities would have prevented the incident occurring.

243. The review team has also looked at the Agency's performance in responding to the incident itself. The report looks at three components of incident management:

- the actions taken by the Agency in managing the event;
- those issues where performance may be improved in future, ie. lessons learnt;
- external comments made in response to an invitation by the Agency.

244. The review team has concluded that the overall response by the Agency to the incident was good. Agency officers are to be commended for the way in which the incident was handled, and the commitment shown over an extended period.

245. Several issues emerged by which the Agency and other response organisations could improve performance in any future major incidents, as follows:

- Gold Command - the need for greater clarity amongst participants so that roles and responsibilities are well understood;
- health and safety - the need to develop quick methods of risk assessment in emergency situations;
- health advice - the need to develop a system between relevant agencies to give health advice directly to the public during major incidents;
- major incident response - the need for the Agency to review its systems to sustain an emergency response over a long running incident;
- site inventories - the need for better information on the types and amounts of special waste held on high risk sites;
- pollution monitoring - the need to mobilise resources from across the Agency and other providers at an early stage;
- flood risks - the need to review the risks posed at sites prone to flooding, taking into account the extraordinary events experienced in late 2000 which could possibly be linked to global warming.

246. Comments were received from seven external organisations and groups in response to a questionnaire distributed by the Agency. The responses included many supportive comments for the work of the Agency, and many constructive suggestions for how performance could be improved in future. Themes emerging from the responses included the need for improved planning and collaboration between all emergency response organisations, greater focus on public health issues, and the need for a clear understanding of the Agency's role in emergency response.

247. The Agency is committed to reviewing its operational practices to ensure that issues identified in this review will be developed in to an action plan for adoption across the Agency. Similarly, issues which relate to joint working with other response organisations will be identified and reviewed jointly with those bodies.

APPENDIX 8 - GLOSSARY

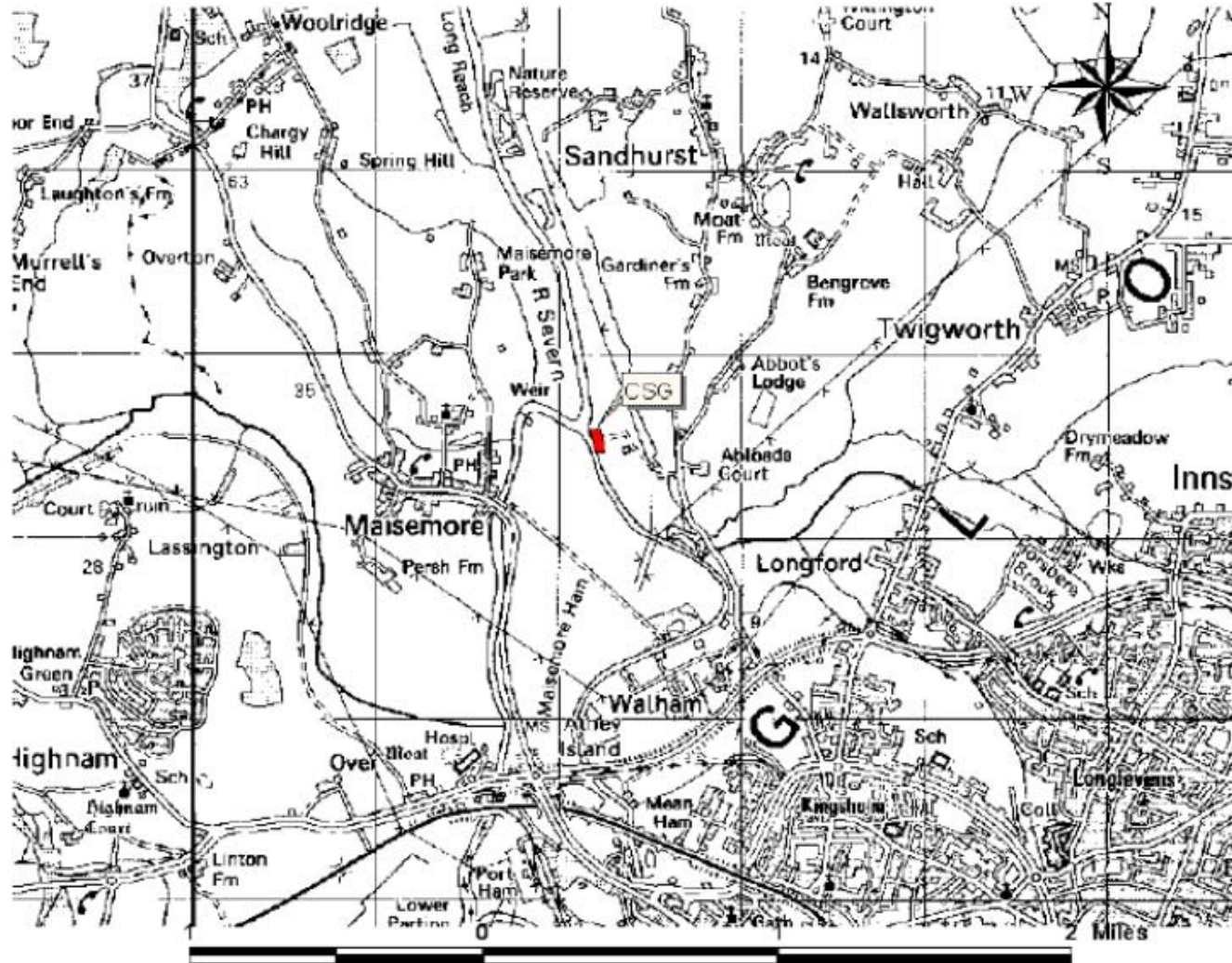
Agency	Environment Agency
BSE	Bovine spongiform encephalopathy
CA	Competent Authority (HSE and the Agency) for enforcement of COMAH
CCDC	Consultant in Communicable Disease Control
CIRS	Chemical Incident Response Centre
COMAH	Control of Major Accident Hazard Regulations 1999
CSG	Cleansing Service Group Ltd
Dangerous Dose	Dose that would cause severe distress to all persons suffering it and could result in highly susceptible people being killed. It can therefore be considered as close to the threshold of fatalities
FSA	Food Standards Agency
GCC	Gloucestershire County Council
GHA	Gloucestershire Health Authority
Gold Control	Emergency control group comprising representatives from: Police Authority, Fire Service, Ambulance Service, Gloucestershire Health Authority, Gloucestershire County Council, Environment Agency, Health and Safety Executive, Tewkesbury Borough Council
HID	Hazardous Installations Directorate of HSE
FOD	Field Operations Directorate of HSE
HSE	Health and Safety Executive
IBC	Intermediate bulk container
Laboratory smalls	Waste from laboratory work usually in the form of mixed chemicals in small containers (<5 litres)
MAFF	Ministry of Agriculture, Fisheries and Food
NFU	National Farmers Union
TBC	Tewkesbury Borough Council

APPENDIX 9 - INVENTORY OF SUBSTANCES INVOLVED IN THE FIRE

SUBSTANCE	QUANTITY (tonnes)
Cyanide solutions	0.1
Pesticide residues	0.8
Mercury based pesticide	0.2
Triozine biocide	0.12
Metals (Nickel, Copper, Aluminium)	0.8
Flammable smalls	0.8
Ammonium chloride	1.0
Paint thinners	49.2
Chlorinated solvents	21.1
Acrylic resin	4.8
Paint stripper	8.0
Mixed aerosols	NK
Mixed solvents	20.5
Acidic resin	0.8
Magnesium oxide/nitride	0.8
Aluminium chloride	0.6
Methylated spirit	2.2
Methanol	6.0
Adhesives	34.0
Lab smalls	8.8
Isopropanol	12.0
Acetone	4.8
Batteries	-
TOTAL	177.42

APPENDIX 10 - MAPS, DIAGRAMS AND PHOTOGRAPHS

Map of Sandhurst



Photograph 1: Approach to site.



Photograph 2: Compound 3 after the fire.



Photograph 3: Close up of compound 3 after the fire showing fire damaged cylinders.



Photograph 4: Close up of compound 3 after the fire showing fire damaged tanker.



Photograph 5: Close up of compound 3 taken during the fire showing fire damaged aerosols in foreground.



Photograph 6: Close up of compound 1 after the fire with seat of fire in centre of view.



Photograph 7: Close up of compound 1 after the fire showing fire damaged drums.



Photograph 8: View of part of large well and site offices during flooding.



Photograph 9: View of site during flooding.



INTERNAL REVIEW INTO EVENTS LEADING UP TO INCIDENT AT CLEANSING SERVICES GROUP LTD (CSG) SANDHURST, GLOUCESTER

EXECUTIVE SUMMARY

1. HSE has a framework of policies, procedures and guidance within which inspectors exercise their judgement as to the level and nature of regulatory interventions with duty holders. Inspectors for the CSG site operated within that framework in that they:

- targeted significant resource at the site in recognition of the hazards, risks and poor performance of the company;
- provided advice on deficiencies and, when the seriousness of the risks was apparent, took formal enforcement action on the most serious matters;
- recognised that continued regulatory oversight was needed to maintain progress on improvements after the formal enforcement;
- responded to complaints made about the company by employees and members of the public in an appropriate way;
- liaised appropriately with other regulators to co-ordinate action and avoid placing conflicting requirements on the company;
- consulted employees about health and safety standards on site.

2. In all cases, the inspectors considered appropriate courses of action and made rational choices which they felt best suited the circumstances. This led, ultimately, to deficiencies being revealed and action taken which resulted in the site making many improvements in health and safety standards from 1998 to October 2000. But we reflected on whether alternative courses of action might have given better results.

3. Up until formal enforcement in 1998, HSE had been visiting the site and making recommendations about conditions, but without having the desired effect in terms of the pace or nature of improvements. The emphasis in HSE's recommendations was on physical conditions and it might have been appropriate to have raised concerns formally with management about its ability to identify and control risks adequately. It was right to secure improvements to workplace conditions because inadequacies in these would have directly threatened health and safety. However, there was a need to ensure that management had the right systems in place to manage risks on an ongoing basis.

4. This leads to a second point. It was clear after a visit in 1998 that there were serious and deep rooted concerns about management. It might then have been useful to have registered these concerns with the most senior management of the CSG group of companies. This might have resulted in improvements in management attitude which the inspectors had considered to be necessary. We noted that approaching a central headquarters where this was in a different region and regulated by a different HSE directorate was complicated and this might be something for further examination by HSE. We also note that Hazardous Installations Directorate (HID) is developing the "Lead Inspector" system, the purpose of which is to provide a co-ordinated approach to regulation of Control of Major Accident Hazard Regulations 1999 (COMAH) top-tier multi-site companies, and consideration might be given to how this principle could be extended to cover other multi-site companies.

5. A further point concerns the enforcement action taken after the 1998 visit. We are convinced that serving prohibition and improvement notices was right in that it tackled some serious and imminent risks. Furthermore, they provided a springboard for further improvement programmes. However, prosecution, in addition to the notices, may have been appropriate at this stage given the fact that the company management had been less than frank in describing some of their more dangerous operations to inspectors at previous visits. We do, however, note the decision on the merits of prosecution was finely balanced. The inspector's view, that prosecution on top of the notices would have demotivated site

management, is understandable. We note that HSE is now finalising an enforcement management model which will aid future proportionality and consistency of inspectors' judgements on enforcement action.

6. HID's experience with regulating the CSG site raises questions about standards in the waste processing sector generally. HID may wish to consider, in the light of its other priorities, whether a strategic inspection initiative targeting this sector is appropriate.

INTRODUCTION

7. HSE and EA are independently carrying out internal reviews of their regulatory activities at the site prior to the fire/flooding incident at Cleansing Service Group Ltd (CSG), Upper Parting Works, Sandhurst Gloucester between Monday 30 October 2000 and 3 November 2000. The HSE/EA main report into the incident gives the background to activities on the site, the incident and also the relevant legislative framework and is not repeated here.

8. The terms of reference for HSE's internal review are attached at Annex 1. This report constitutes the outcome of the review.

9. This review concentrates on HSE's regulation of CSG prior to the incident. However, the main report sets out HSE's immediate response to the incident which we considered was adequate in terms of its nature and timeliness.

HSE ORGANISATION FOR MAJOR HAZARDS

10. The Chemical and Hazardous Installations Division (CHID) was set up on 1st April 1996 following HSE's review in 1995 of its regulatory activities in the field of major hazard sites, explosives and the manufacture and transportation of chemicals and other hazardous substances. The review concluded that all these activities should be managed by a single Division. The new Division, CHID, was set up with four Operational Units whose staff were drawn mainly from the chemicals groups in HSE's Field Operations Directorate (FOD). The Explosives Inspectorate and the Major Hazards Assessment Unit were brought into CHID from the former Technology and Health Science Division.

11. To support the field force, three Headquarters Units were set up. The Operational Strategy Unit took over staff and responsibilities from some of FOD's Operational Policy Units. A Technical Assessment and Information Technology Unit was formed to deal with the IT needs of the new Division and to develop a cadre of specialist inspectors, mainly in the fields of process safety and mechanical and electrical engineering, to provide advice and support to the field teams. The Management Support Group (MSG) was set up to co-ordinate a number of management support functions for the Division.

12. On 1 January 2000 CHID, HM Inspectorate of Mines and Offshore Safety Division were been brought together in a single Hazardous Installations Directorate (HID). The work undertaken by HID continues to be that of its component Divisions. Figure 1 gives the HID organisation structure. Figure 2 is a map showing regional boundaries for the various HID Units.

13. HID Land Unit 3 Group C (HIDL3C) has responsibility for regulation of CSG. Group C is based in Birmingham; it comprises one Principal Inspector with management responsibility for five health and safety inspectors and two administrative staff. The Group covers the West Midlands, Herefordshire, Worcestershire, Gloucestershire, South Gloucestershire, Powys and Avon Local Authority areas which house some 350 major hazard sites, 20 of which are COMAH top-tier and 50 lower-tier. It also has responsibility for about 9,000 non-COMAH chemical manufacturing and storage sites.

14. HIDL3C receives specialist inspector resource from the Unit's Discipline Specialist Unit HIDL3E comprising specialists in control systems (2), process safety (2), mechanical engineering (1). HIDL3E provides assistance to all four operational groups in HID Land Unit 3. There is technical resource in HID

centrally. In the event of shortage of in house resource, HID can call on specialist inspector resource from FOD's Regional Support Groups.

15. All further references to HID in this report should be taken to include its predecessor organisation CHID.

HSE'S APPROACH TO PLANNING AND PRIORITISATION

16. All parts of HSE are required to implement HSC's enforcement policy which is based on four principles: proportionality (relating enforcement action to risks); consistency (taking a similar approach to similar circumstances); transparency (helping duty holders to understand what is expected of them and what they should expect from HSE); targeting (focusing inspection on the most serious risks or where hazards are least well controlled).

17. Over the years, procedures for targeting and planning HSE's regulatory interventions have changed in detail but the essentials have remained constant. Broadly speaking, interventions are either proactive where visits are planned on the basis of intelligence about the company, or reactive in response to accidents or complaints.

18. The basis for planning proactive interventions (primarily inspections, but also including visits as part of national or local projects to gather information or seek improvements on specific hazards) is to target those duty holders whose activities present the greatest hazard or risk and/or where confidence in management's ability to control the risk is poor. In the major hazards area, this approach has been modified to take account of the Control of Industrial Major Accident Hazard (CIMAH) Regulations 1984 (replaced by the COMAH Regulations in April 1999). CIMAH laid down additional duties, beyond the general duties of the Health and Safety at Work etc. Act 1974, on operators of sites which stored or used specified quantities of named dangerous substances. These so called top-tier sites generally presented the greatest hazard to employees and the public and were given priority in HID's inspection programme. HID's target was to inspect every top-tier site every 12 months irrespective of the quality of control of risks on site. This was in line with HSC's enforcement policy which recognised that where hazards were high the performance of the operator was less relevant in considering the extent of HSE's regulatory interventions. CSG was not a CIMAH or COMAH top-tier site.

19. Inspection frequency at non top-tier sites was based on inspectors completing a numerical rating of the company after an inspection. The rated factors were: the hazard and risk to health and safety of employees; risk to the public; the adequacy of welfare facilities; and confidence in management's ability to control risk. The higher the rating, the more frequently the site would be inspected. Use of this rating system was discontinued in 1999, to be replaced by a revised system based on the site hazards and their control. CSG consistently had a poor rating.

20. For each site, an inspection plan was drawn up setting out the types of inspection to be undertaken, the topics to be selected for scrutiny, and the resources required. This plan was aimed at providing a living record of dealings with the site recording where improvements had been made and where further action was necessary. This system of site inspection planning was formally introduced in 1999, in part driven by the requirement on the Competent Authority in the COMAH Regulations for inspection plans.

21. The basis for planning reactive interventions was to consider investigating incidents which caused, or had the potential to cause, serious injury, or those where there appeared to be a prima facie breach of the law. All complaints were investigated if sufficient information was provided to allow meaningful enquiries to be made.

INSPECTORS' POWERS

22. Inspectors have wide ranging powers to enforce the Health and Safety at Work etc Act 1974. These include rights of entry to premises and the power to take photographs, samples and have access to documentation. Where they come across deficiencies they can take a range of actions:

- advise the company verbally or in writing;
- serve an improvement notice which requires deficiencies to be put right within a fixed time;
- serve a prohibition notice stopping particularly dangerous activities;
- initiate prosecutions in the Courts.

HID'S REGULATION OF CSG

Questions for HSE's Prior Role Review

23. The following were the main questions which we sought answers to:

- Were HID's regulatory interventions with CSG appropriate given the hazard, risk and performance of the company ?
- Did HID identify deficiencies in the control of risk on site and take appropriate action with the management of the company ?
- Were HID's dealings with CSG managed in accordance with HSE's principles, procedures and guidance relevant to this type of duty holder ?

Contacts with the Company

Pre 1995 Contacts

24. The prior role review focussed on recent contacts from 1995 between HSE and CSG; these are set out in full in Annex 2 of this report. However, HSE has a long history of involvement with the site dating from 1981. Visits were made to the site during the 1980s during which HSE expressed concerns regarding physical conditions on site, including the handling of dangerous substances. This culminated in prosecution of CSG (at that time known as Cleaning Service Group)Treatment and Disposal) Lt.) in 1989 for a breach of the Health and Safety at Work etc Act 1974 following the release of boiling methylated spirits from a drum. Further enforcement followed in 1991 when HSE served an improvement notice requiring improvements to permit to work systems and training. Inspection activity continued between 1991 and 1994.

1995 - 97 Contacts

25. Since 1995 and up until the fire on the 30th October 2000, CSG site had 34 visits from HSE. 16 of these were inspections, 10 were investigations and 8 were for formal enforcement. The relatively high level of contact for a company of this small size and complexity reflects problems on site and the poor rating assigned to the company.

26. Between 1995 and 1997, the most significant contact with the company was an inspection by two inspectors in 1996. This visit revealed a number of deficiencies including inadequacies in the drum storage area (including poor labelling and segregation of incompatible chemicals), problems with controlling exposure to hazardous substances, poor control over drum shredding, permit to work systems, and electrical sources of ignition. After discussion, the two inspectors considered that there were no legal breaches serious enough to warrant immediate enforcement action and were considered to be typical of similar sized companies. The deficiencies were confirmed in writing to the company who responded stating that they were taking action to deal with the problems.

1998 Contacts

27. A further inspection, prompted by a complaint from an employee, was undertaken in September 1998 when deficiencies were noted again, but a step change in HID's involvement at the site came a few days later when two inspectors visited in response to another complaint from an employee. The inspectors visited the site and decided that the substance of the complaints was justified. Some of the risks were considered serious enough to warrant prohibition. Prohibition notices were served preventing use of the drum shredder unless there was proper drum cleaning beforehand and banning sources of ignition round the small well area where highly flammable liquids were handled.

28. The inspectors returned again shortly afterwards with colleagues from the FOD Regional Support Group who were specialists in occupational hygiene and process safety and a further thorough inspection was undertaken. This led to more formal enforcement with the serving of improvement notices dealing with operating procedures, decontamination facilities and laboratory fume cupboards.

29. Clearly, the anonymous complaint was a significant point in HSE's relations with CSG, and it raises questions as to why the seriousness of the risks had not come to light earlier, and was the action taken following this, and earlier visits, adequate.

Inspection Techniques Used in 1998

30. In 1998 and in years previous to this, a principal source of guidance on how inspectors conduct inspections was an internal HSE document called the FOD Guide to the Inspection of Health and Safety Management. The guide set out a number of inspection methods and indicated some broad principles about selection of methods to fit different circumstances. The FOD guide has been supplemented by HID's own inspection guidance.

31. The techniques range in sophistication from conventional inspection through to audits and are designed to encompass a range of duty holder organisations from major multi-national companies through to small firms. At CSG, inspectors decided to undertake conventional inspections. This involves identifying inadequate workplace precautions and procedures and then investigating the failures of management which produces them. It utilises a mix of visual observation, interviewing and examination of documents. This technique is appropriate to organisations, such as CSG, which do not have developed management systems or skills.

32. Using this technique, the inspections of 1996 revealed many deficiencies in workplace precautions, though the inspectors considered most of these to be minor and within the competence of the company to correct. On the basis of positive indications from the company that these deficiencies were being dealt with, no further regulatory action was taken. HID had many higher hazard sites to deal with and, as has been noted earlier, CIMAH top-tier sites were given priority in HID's inspection programmes. The decision not to pursue the issues further is therefore understandable. However, the focus of the inspector's written advice was on the poor workplace precautions. Conclusions were not put to management about what this meant in terms of the underlying quality of management arrangements for identifying and controlling risks. The fundamental question of why these risks had arisen in the first place does not appear to have been addressed with management at this visit.

33. One reason for not pursuing these issues at the 1996 visit was that the seriousness of the risks was not apparent. For example, the drum shredder was identified as a possible problem but it was not clear what the level of risk was because of uncertainty about the materials being handled. Hence, there was a recommendation for further assessment along with improved precautions. Drum storage was identified as a problem because of inadequate segregation of incompatible chemicals and drums in poor condition, but the company was already in the process of reorganising the area. Finally, by way of example, the inspector was not told by management that highly flammable liquids were used at the small well (the subject of a later prohibition notice).

34. The absence of first-hand knowledge on the part of the inspector about what substances were used and precisely how some operations were conducted naturally influenced the course of action he

adopted. The inspector sought views from some employees about conditions (in line with HSE policy); he was not informed of any high risk activities being undertaken.

35. HID responded to a complaint from an employee in early September 1998 by carrying out an inspection which again revealed widespread deficiencies (see paragraph 27). While the inspector was considering how to take this forward, a further complaint, followed by an inspection and subsequent enforcement overtook events.

Enforcement Action in 1998

36. The action following the visit prompted by this further complaint was swift and decisive. Prohibition notices were issued dealing with the most serious risks, followed shortly afterwards by three improvement notices. The priority for the inspector was to improve workplace precautions to remove the immediate risk.

37. The inspector also called in additional expertise to ensure that all significant risks on site were evaluated and to provide a view on support for the prohibition notices. This was appropriate given the nature of the risks and the lack of rigour in the company's own management arrangements for identifying and controlling risks.

38. At this stage, and in the months following the visit, the inspector considered that his enforcement action had achieved the desired results: the immediate most serious risks had been dealt with and he judged that management was more aware of, and committed to, its safety responsibilities. Management complied with the notices (though some of the improvement notices were extended because of the extensive nature of the work required) and conditions on site started to improve significantly.

Alternative Courses of Action in 1998

39. One option open to the inspector in 1998 would have been prosecution of the company for the deficiencies found. This could have been in addition to, or instead of, the serving of notices. Prosecution would not have secured early improvements in the serious risks in the way the notices did and generally use of notices is less resource intensive than taking a prosecution. Set against this, the HSC enforcement policy requires inspectors to consider prosecution where there is a need to deter others, or there is judged to have been potential for considerable harm arising from the breach, or the gravity of the offence taken together with the record and approach of the offender warrants it.

40. Widespread deficiencies at CSG had been repeatedly pointed out by HSE and there were indications that, prior to 1998, management had been less than frank in describing their operations to inspectors so that the nature of the risks could be fully appreciated. The inspector, supported by his line manager, decided that, on balance, prosecution was not appropriate. The inspector felt that the change in site conditions and management attitude, prompted by the notices, was sufficient and that prosecuting on top of this might have the effect of demotivating management, thereby creating resistance to further improvements. This was a finely balanced judgement and the scales were tipped in the inspector's mind by a change of personnel at senior site management level.

41. CSG at Sandhurst is part of a larger group of companies whose headquarters is based in Southampton. Where serious failings are identified in part of a larger organisation, one of the options is to take these concerns to the most senior level of the organisation. HID was developing a "lead inspector" system designed to co-ordinate central approaches to multi-site COMAH top-tier companies. These arrangements would not have applied to CSG but the principles were relevant and the inspector did contact his counterpart who dealt with CSG HQ at Southampton. However, both inspectors felt that CSG at HQ was primarily concerned with transport of waste and most of the expertise on chemicals handling resided at the Sandhurst site. As a result, a HQ approach was not taken but it may be that this underplayed the importance of the corporate HQ in setting the priorities and allocating resources for its subsidiary companies.

1999 - 2000 Contacts

42. The 1998 visit and enforcement action was seen by the inspectors as a turning point. The company was responding positively to recommendations. Visits in April 1999 record that improvements had been made in many areas. The improvement notices on decontamination facilities had been complied with at a cost to the firm of £55,000, progress was made on the development of operating procedures, working practices had improved, there was better provision of protective equipment, better storage of toxic and flammable chemicals and generally improved housekeeping. The inspector considered there to be evidence that the site was beginning to develop a management system for its risks.

43. The inspector's strategy at this stage was to ensure the firm prioritised their efforts on the most serious concerns. Having secured improvements, he moved the agenda on at visits in the Autumn of 1999 to other matters requiring attention. These included ensuring that CSG were geared up to complying with the requirements of the new COMAH Regulations. Representatives from the firm attended a seminar organised by HSE on COMAH and they committed themselves to produce an action plan on how they would meet their new responsibilities. The final improvement notice on operating procedures was completed at the same time. This approach was in line with HSE policy and practice of ensuring sufficient pace and direction of improvements by a combination of advice and guidance backed by use of enforcement action when necessary.

44. A parallel strand of activity at this time was increasing concern over the site by the local population. In 1998, HID had responded to complaints from a local resident clarifying enforcement responsibilities between EA, the local authority and HID, and informing the complainant of the results of EA's air sampling around the site.

45. In November 1999, the inspector visited Tewkesbury Borough Council to discuss their concerns over CSG. Roles and responsibilities were clarified and the inspector explained the work which HID had done on site. A commitment was given to contact EA to discuss risks of site flooding and to participate in liaison meetings with local residents. All this was in line with HSE policy and good practice on responding to complaints and being open about the way the site was regulated.

46. HID agreed to attend the local liaison meeting which brought together the regulators, CSG, the local authority and residents but the HID inspector was on leave on the date the meeting was held.

47. HID sought to ensure continued progress on the site through visits in February and April 2000. The view that the company were making significant efforts to improve was confirmed, although there were still concerns on management's safety awareness. For example, they had made good progress on the method of highly flammable liquids handling but had sited the bulking operation inappropriately. There were other matters requiring attention - consultants had been used to undertake risk assessments and to produce a major accident prevention policy (MAPP) - a new requirement of COMAH - and CSG was advised that neither was adequate and more work was needed. The company recognised this and agreed to revisit the work. The HID policy on MAPPs was to ensure that firms were making progress towards producing them but, as this was a new requirement, enforcement action would only be undertaken where inadequate progress was being made. The inspector's approach at CSG was in line with this policy.

LIAISON WITH OTHER REGULATORS

48. HSE had responsibility for health and safety enforcement but it was not the only regulator dealing with the site. The EA was responsible for waste management and environmental legislation and the local authority, Gloucestershire County Council, was the hazardous substance authority (HSA) responsible for enforcing legislation consenting to the presence of chemicals on site. We are only concerned with HSE's role but it is relevant to consider whether HSE interfaced appropriately with its fellow regulators.

HID/EA Liaison

49. A memorandum of understanding existed between EA and HSE. This was supplemented by a more detailed memorandum on the introduction of COMAH to reflect the fact that HSE and EA were the joint competent authority for enforcing the regulations. The memorandum was designed to ensure that both regulators co-operated on matters of mutual concern so that duplicate or inconsistent requirements would not be placed on operators.

50. From 1996 onwards, when the EA took over responsibility for waste regulation at CSG from Gloucestershire County Council, HID and EA exchanged information on a regular basis in line with the memorandum. For example, EA reviewed the company's waste management licence in 1999 and copied the draft licence to HID for comment. Similarly, HID kept EA informed of its enforcement activity. EA and HID shared information about the site which was relevant to protection of people and the environment . For example, EA arranged for off site air sampling. It shared these results with HID who used them to advise a member of the public that levels were below those at which HID would take enforcement action. In November 1999, EA and HID met to discuss matters of mutual concern on CSG and how the regulators might assist each other. We found that the liaison arrangements between HID and EA worked well.

Land Use Planning

51. The main HSE/EA investigation report describes the planning legislation and the role of the hazardous substances authority. With the implementation of the Planning (Control of Major Accidents) Regulations 1999, CSG required consent from the HSA for the quantity and type of substances on site and certain conditions of their storage. Up until February 2000, CSG could have claimed deemed consent i.e. it would have had consent granted simply by claiming it. This was not done.

52. Under COMAH, existing companies such as CSG were required to send HID a notification giving basic information about the site and its operations. HID procedures required a copy of the notification to be sent by HID inspection units to the HSA. This was done. HID procedures also required a copy of the notification to be forwarded to HID's Methodology and Standards Development Unit (MSDU). One of MSDU's roles is to undertake risk assessments for major hazard sites to set consultation distances (CD) around existing sites. Local authorities are required to consult HID about developments within the CD so that HID can advise on the health and safety implications.

53. The HID inspection unit for CSG did not send the CSG notification to MSDU. However, we did not consider this matter to be significant because the notification would only have triggered the creation of a MSDU data base record. It would not have led to the setting of a CD; this would only have been done on receipt of a request for a hazardous substances consent from the HSA. No such request had been received by HID by the time of the incident.

FIGURE 1:

HAZARDOUS INSTALLATIONS DIRECTORATE ORGANISATION STRUCTURE

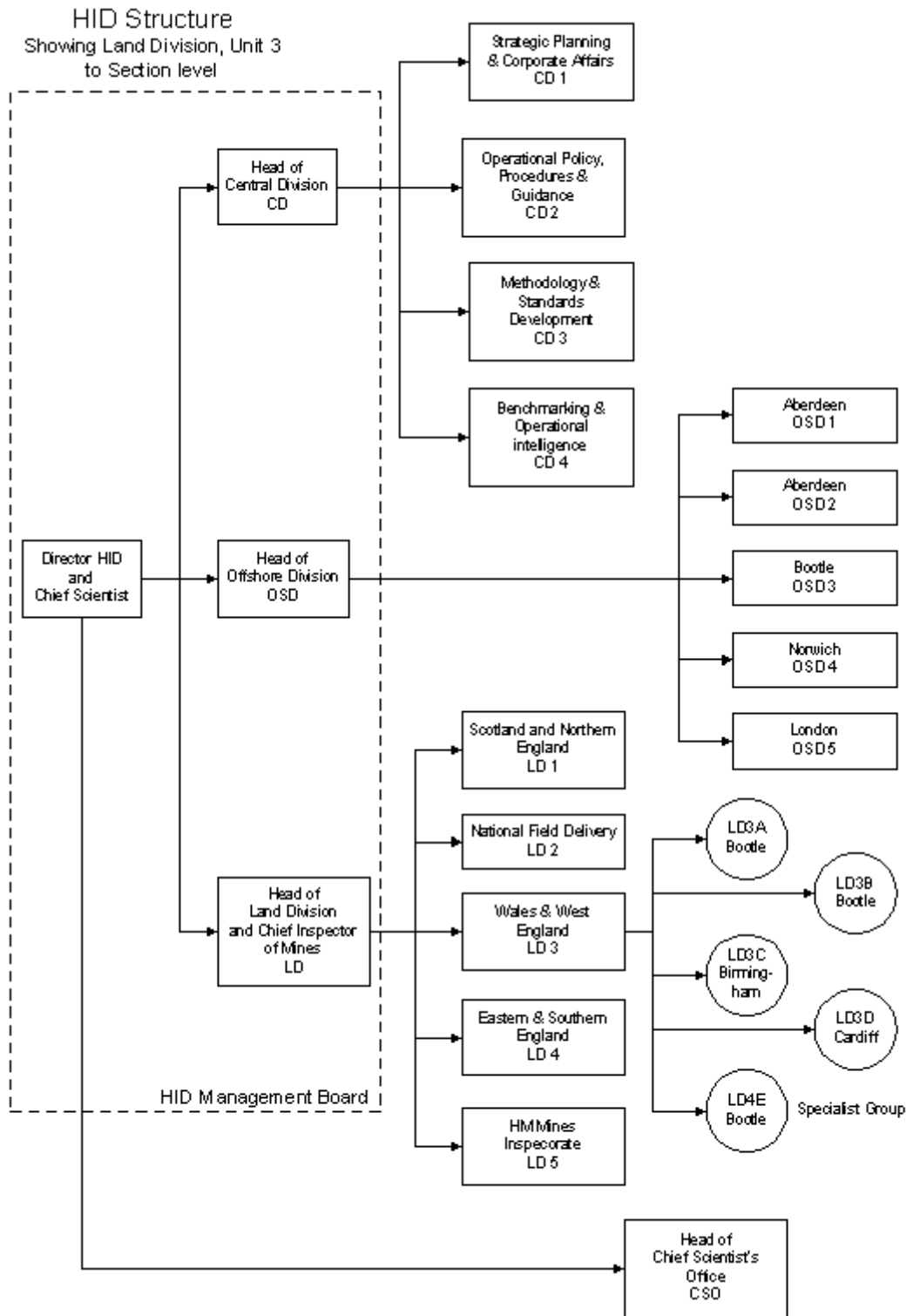
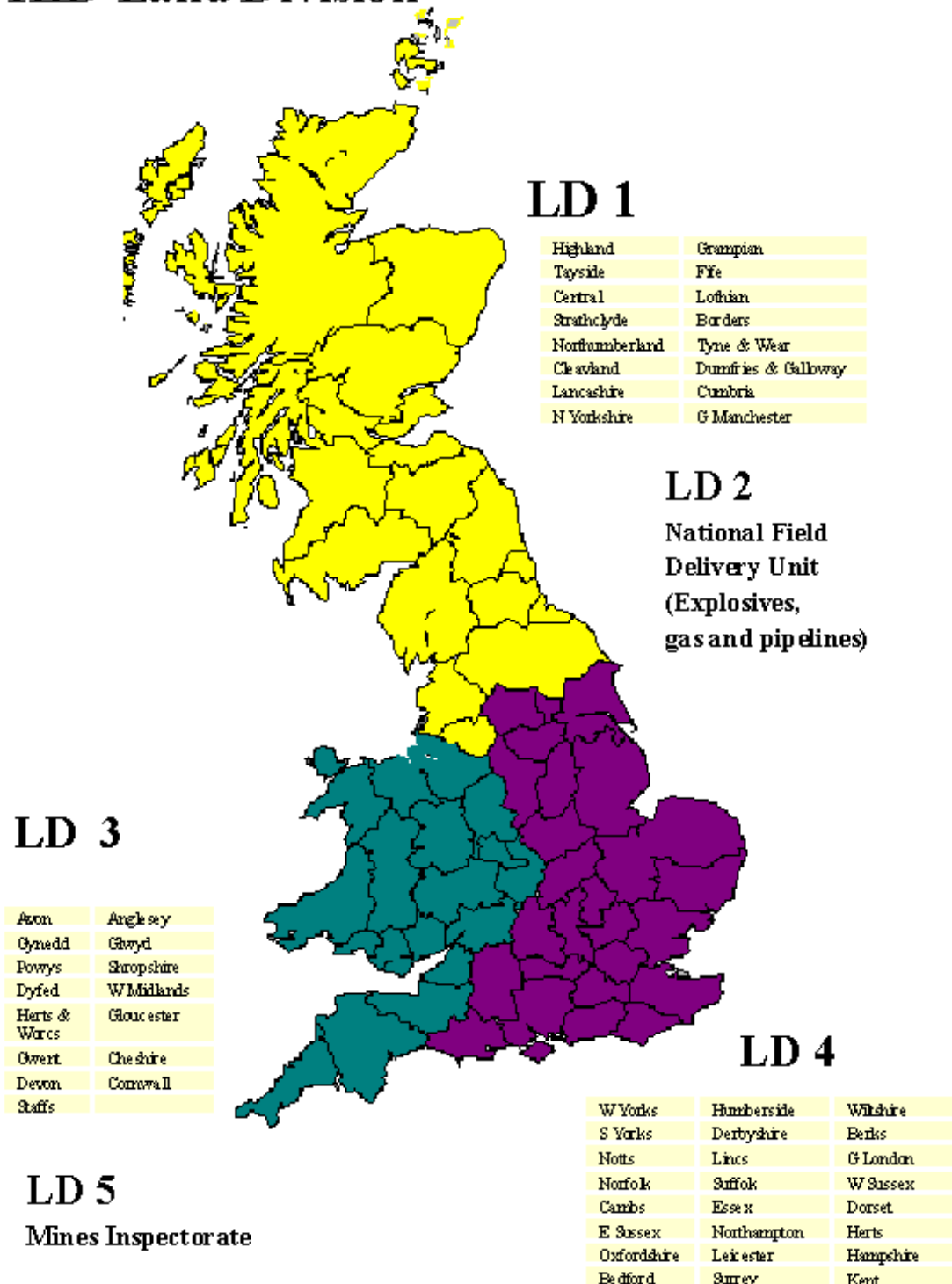


FIGURE 2:

MAP SHOWING REGIONAL BOUNDARIES FOR HAZARDOUS INSTALLATIONS DIRECTORATE, LAND DIVISION

HID Land Division



Annex 1 - Terms of Reference for the Review

To review HSE's role in regulating the activities of Cleansing Service Group Limited at its site at Sandhurst Lane, Sandhurst, Gloucester prior to, and with particular reference to, the fire at the premises on the night of 30 October 2000. The review will examine the action HSE took at the site to ensure compliance with appropriate legislation, comparing it with HSE's policies, procedures and guidance which are relevant to this class of duty holder.

Annex 2 - Chronological List of Recent HSE Contacts

Overview

Total Visits: 35 Total Time spent - 96 hours 45 minutes

Investigation - 10 Investigation - 27 hours 45 minutes

Inspection - 15 Inspection - 53 hours

Enforcement - 8 Enforcement - 13 hours 45 minutes

Hazards - 1 Hazards - 2 hours

Education/Promotion - 1 Education/Promotion - 15 minutes

Contact Date	Purpose
23.8.95	Investigation into allegation of poor tank entry procedures. Allegation not justified. Inspection undertaken whilst on site.
11.12.95	Investigation into slipping accident. Collection of evidence of good system for tank entry.
13.11.96	Routine inspection. Problems identified: COSHH assessments weak, possible exposures at, for example, drum shredding and sampling, segregation of drums, Permit to Work, labelling, flame proofing electrics, lighting. Advice provided on these issues.
25.7.97	Investigation into plastic waste container (IBC) which was involved in an off-site accident. Examined container. Photographs taken of IBC. HSE specialist took samples of chemical in IBC.
3.9.98	Investigation into complaint alleging poor COSHH performance, lack of will to improve, no training or information on shop floor. Complaint largely justified. Wastes in deteriorating drums, poor safety culture, poor decontamination/welfare facilities - improvements planned by company.
9.9.98	Discussion with complainant regarding poor work practices. Serious matters for subsequent investigation included: processing of wastes in large and small wells, drum shredder, separation of incompatible materials, safety training of operators, decontamination/welfare. Also, COSHH, Personal Protective Equipment (PPE), machinery guarding.
14.9.98	Follow up of issues raised by complainant on 9.9.98. Two prohibition notices (PNs) issued: one on operation of drum shredder with uncleaned drums due to fire and toxic risk and one on ignition sources around small well. Verbal prohibition of highly flammable liquids in solids consolidation area. Informed company of potential for several improvement notices (INs). Agreed with management return visit with process safety and occupational health specialists.

Contact Date	Purpose
21.9.98	<p>Follow up of matters from previous visit with process safety and occupational health specialists. Conversations with management and employees. Key issues examined included process chemistry of wells and consolidation area and decontamination/welfare. Inspection also covered storage, operation of oil plant, tanker entry and cleaning, training, fire precautions.</p> <p>INs to be issued for examination of fume cupboard, welfare and standard operating procedures for large well.</p> <p>Checked compliance with PNs, including verbal ones, served on 14.9.98 - company seemed to be complying so far.</p>
25.9.98	<p>Fortnightly conversations with complainant (to end November 1998) regarding weaknesses in health and safety provisions on site, updates on progress. Complainant extremely helpful and information provided largely accurate.</p> <p>Try to encourage complainant but explain that HSE has provided agenda for company and must allow it to proceed subject to further follow ups.</p>
13.11.98	<p>Discussions with management on plans for new welfare facilities in response to IN which seem to comply in full with IN. Extension in IN granted due to large scale of project. Agreed that management contact site inspector when final arrangements made with contractors.</p>
17.12.98	<p>Follow up to Notices served: PNs: (1) on use of small well complied with; (2) drums for shredding now washed out. INs: (1) fume cupboard front interlocked with extract, laboratory tidier; (2) decontamination/welfare - extended due to large scale of project; (3) operating procedures for large well submitted in writing (SOPs).</p>
9.4.99	<p>Checked on PNs for use of small well and shredding of uncleaned drums - company still in compliance.</p> <p>IN on decontamination and changing facilities complied with to a high standard, having spent £55K on a new block.</p> <p>Reviewed progress on IN on operating procedures - reasonable draft seen.</p> <p>Inspection covered: (a) Year 2000 - no problems and (b) progress on matters raised in previous year - 50% reduction in cyanides storage, testing for cyanides, new agitators for large well, tanker entry procedures seem adequate, improvements observed in housekeeping and staff safety culture.</p>
27.5.99	<p>Management visited HSE office to update site inspector on progress with IN on SOPs. SOPs are ready and training to commence soon. Hardware (label printer for drums, continuous pH monitor and improved impellers for wells to support SOPs) is on order. IN extended to end August 1999 as requested by CSG due to visible commitment of managers, financial expenditure and extent of improvements over the year.</p>
18.6.99	<p>CSG manager attended HSE seminar (with EA present) on COMAH duties of Lower Tier sites. Advice given on application of regulations, notification, preparation and content of major accident prevention policies (MAPPs), HSE/Environment Agency (EA) Competent Authority planning and inspection strategy, charging..</p>
3.8.99	<p>Unannounced investigation into complaint that highly flammable liquids (HFLs) tipped in consolidation area, contrary to verbal prohibition. Audited records for wastes tipped in consolidation area, little evidence of HFL tipping. Issues not justified. However, poor control in bulking HFLs elsewhere on site, holes in yard surface, poor drum handling/storage practice.</p> <p>Also, followed up progress on other issues from previous advice/enforcement - housekeeping (spills, segregation), oil plant. Evidence of safety management progress. Asked CSG for plan of future health and safety work.</p>

Contact Date	Purpose
15.10.99	<p>Visit of CSG manager to HSE office to provide progress update and respond to letter seeking plans for future health and safety work. CSG responding well to items identified in letter. CSG to prepare action plan in relation to other issues - COMAH, COSHH, traffic, condition of laboratory. Informed that lagging on old insulated tanks contains asbestos. Major strip required urgently, absorbing large part of budget for some of the other works.</p> <p>SOPs for large well completed and in force - IN discharged.</p>
17.11.99	<p>Meeting with Tewkesbury Borough Council over their concerns over CSG and risks. Explained HSE role, findings and actions at recent interventions. Expressed view that risk to public is low - large toxic release theoretically possible but low likelihood and lower because of HSE work. Agreed to investigate fears of release due to major flooding (via the EA) and to participate in any liaison meeting with local residents.</p>
25.11.99	<p>Meeting with EA in relation to CSG environmental risk assessment (prepared by consultants) as required by EA. EA asking for HSE views on assessment. Agreed assessment poor in many areas - EA pursuing this. Offered HSE technical assistance in relation to protocols for measuring airborne volatiles content and on potential harm to health from exposures measured - await EA requests for assistance.</p>
10.12.99	<p>Telephone discussions with CSG management on selection of contractor for forthcoming work on removing asbestos lagging from old tanks now used for treated effluent. Advised to use contractors known to local HSE Construction Group. Also, advised appointing "expert client" (i.e. someone familiar with practice of asbestos removal) to safeguard CSG's interests.</p>
7.2.00	<p>Visit to Bristol Office of CSG to discuss COMAH:</p> <p>(a) Details of COMAH lower tier (LT) notification, to confirm quantities of substances notified (just below top tier (TT) threshold) was accurate reflection. Also discussed inventory management to remain below TT.</p> <p>(b) Draft Major Accident Prevention Policy (MAPP) prepared by consultants - very poor.</p> <p>(c) Risk assessment also prepared by consultants - very poor.</p> <p>HSE view on poor quality of MAPP and risk assessment was in line with CSG suspicions. CSG asked to review these documents and to return them to consultants for review and amendment.</p>
11.4.00	<p>Site visit to consolidate progress and plan next steps.</p> <p>Audited SOPs for large well SOPs - good compliance with these, tested understanding by chemists, records, drum labels. CSG planning to get BSI accreditation for SOPs. Proposed improvements to process - acid additions sump to go sub surface - would reduce amount of acid mist occasionally generated in working environment.</p> <p>Asbestos strip complete.</p> <p>HFL bulking - good work but moved to centre of drum store.</p> <p>COMAH inventory management adequate. MAPPs and Risk Assessment under preparation by consultants.</p> <p>Consolidation bay rebuilt to separate bays for different substances .</p> <p>Action plan includes traffic, COSHH, laboratory upgrade, HFLs at oil plant.</p>
4.5.00	<p>Meeting with Tewkesbury Borough Council to discuss CSG public liaison group re-launch meeting. Agreed to hold meeting on 16.6.00 for parish councillors, complainants, regulators and CSG to establish Terms of Reference for liaison group - identification of each party, purposes and remit, information on CSG and regulator activities.</p>