



**STERITECH**

Protecting what matters

**Steritech Pty Ltd**

**Pollution Incident Response  
Management**

**Plan**

**(PIRMP)**

**WETHERILL PARK**

**Environment Protection  
Licence No. 12902**

**Recent Document Revisions:**

<b>Revision</b>	<b>Effective Date</b>	<b>Description of Change</b>
02	14 August, 2017	Update to new format and minor changes re number of chambers



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## Appendix

- 1 List of audits, risk assessments and reports
- 2 Material Safety Data Sheets for Ethylene Oxide and Nitrogen
- 3) Pollution Assessment Risk Matrix & Risk Matrix tables
- 4) Stormwater Drains



## **Steritech Pollution Incident Management Response Plans**

### ***Pollution licence number: 12902***

Steritech Pty Ltd, located at 5 Widemere Road Wetherill Park employs 19 staff on this site and is engaged in sterilisation of client product; from medical and surgical packs to imported timber, honey and other mainly non hazardous products.

Steritech operates on a 24 hour 7 days a week basis and occupies a frontage of 61 metres with a depth of 175 metres. The company has been in operation on this site since 1982 sterilising client goods, first with gamma radiation and now since 2000 with Ethylene Oxide. Ethylene Oxide (EtO) prevents cell reproduction and as such can kill all known viruses, bacteria and fungi, including bacterial spores. EtO is compatible with a number of materials. It is commonly used in the medical field for the sterilisation of medical equipment and Australian Medical Device Manufacturers are among some of Steritech's major customers for this process. The sterilisation process is designed to kill all bacteria in sterile medical and surgical packs. It is also used for insect and disease control of imported timber and other products.

### **Definition of a pollutant Incident:**

A pollution incident means, an incident or set of circumstances during or as a consequence of which there is or is likely to be a leak, spill, or other escape of substance that involves actual or potential harm to health and safety of individuals or the surrounding ecosystem.

The incident response plans detailed here; are in regard to pollution licence number : 12902 involving Ethylene Oxide, therefore Cobalt 60 is referred to only in summary and not dealt with as part of this plan.

The pollution incident response plan has been written with regard to:

Part 5.7A of the POEO Act, section 153A & C of the protection of the Environment Operations (POEO) Act 1997 and 98B, D & E of the POEO Regulations



## Activity

Ethylene Oxide, the sterilisation agent used by Steritech on this site, is the approved sterilisation agent under the Therapeutic Goods Act (TGA) for therapeutic goods. For client product not suitable for Ethylene Oxide, sterilisation using Gamma radiation is the approved alternative.

Main Activity; Ethylene Oxide Sterilisation.

Goods arrive from the client by truck in secure boxed, shrink wrapped, palletised form.

Process:

- 1) Short term storage
- 2) Pallets moved into pre-conditioning units
- 3) Pallets moved into one of 4 Ethylene Oxide sterilisation chambers
- 4) Sterilisation of goods involves the use of steam and nitrogen to flush out oxygen under vacuum. Ethylene Oxide is then introduced for a specific period of time to ensure the goods are sterilised. The process is computer controlled and monitored to a stringent set of requirements using data, sensors, pressure and other probes, to ensure integrity of the system and process
- 5) If the parameters are not met through failure of a component, loss of power or loss of steam, the system, dependent on the stage reached will either immediately abort and evacuate Ethylene Oxide or Nitrogen to the high temperature Thermal Oxidiser or hold in sealed under partial vacuum section of the chamber until power is restored and the process can be completed.
- 6) Pallets are then moved into the Aeration Chamber for a dwell period to allow for the leaching of residual Ethylene Oxide out of the product. The residual Ethylene Oxide is then evacuated to the high temperature Thermal Oxidisers for incineration.



## Primary Hazards

(Please see full detailed risk matrix attached as part of these plans as Appendix 3)

The primary pollutant agents are Ethylene Oxide and Nitrogen.

### **Ethylene Oxide;**

1) Release of large quantities of Ethylene Oxide could result in a very serious fire and explosion. The resulting fire could produce toxic gases.

This risk is seen as very unlikely.

2) A minor leak of Ethylene Oxide through pipe fitting and flange joints is a possible risk however with the use of planned maintenance program, the design of the system and the materials used i.e. Stainless Steel, the risk is seen as low to rare. A leak would be detected by the system, the process would be aborted and the contents of pipes and the chambers would be evacuated to the high temperature Thermal Oxidisers.

This risk is seen as very unlikely.

### **Nitrogen;**

1) Release of large quantities of nitrogen would only occur on vehicle impact with the large storage tank or connecting pipes, located behind the factory on the Western face. The tank is secured behind a 2 metre high chain linked fence. There is potential health effects due to asphyxiation in the local environment to the tank, otherwise the gas would disperse into the atmosphere. A large vapour cloud, visible due to the air becoming cold re the cryogenic effect of nitrogen would be seen. The vessel is located and includes separation distances in accordance with AS1894. That is minimum separation from drains, buildings, property boundaries, flammables etc. so that in the event of a rupture or the safety valve opening, the nitrogen has a chance to dissipate before entering any potentially dangerous areas.

This risk is seen as very unlikely

2) Minor leak of Nitrogen through pipe fitting and flange joints. There is a possible risk, but with the use of planned maintenance program, the design of the system and the materials used i.e. Stainless Steel, the risk is seen as low to rare. A leak would be detected by the system, the process would be aborted and the contents of pipes and the chambers would be evacuated to the high temperature Thermal Oxidisers. The



Nitrogen would be mixed with ambient air at normal atmospheric pressure.

This risk is seen as very unlikely.

## Impact on Surrounding Properties

### Ethylene Oxide:

- 1) Significant release of Ethylene Oxide would see the development of a serious fire, potentially with explosive release, the resulting fire would be toxic.

#### North

- a) 7 Widemere Rd has been purchased by Steritech for future expansion
- b) 9 Widemere Rd; PB Packaging

#### West

- a) The direct bus only route between Parramatta and Liverpool runs directly behind the property, the next property that would be impacted by toxic smoke is NYK Logistics (Australia) at 3 Davis Rd

#### South

- a) 3 Widemere Rd, Biesse Australia
- b) 1B Widemere Rd, Weing Australia

#### East

- a) Open air area use by trucks road surface recycling centre

A major event, depending on wind direction involving Ethylene Oxide may require the alert and evacuation of these businesses. Other businesses to the West and South may require alert dependent on wind direction and advice of NSW Fire Brigade Hazmat teams. Apart from businesses mentioned, further North impact only on an open quarry.

### Nitrogen:

Significant release of Nitrogen would not have a significant impact on surrounding properties. The liquid Nitrogen would on contact with the atmosphere turn into a gas and would be quickly dispersed into the atmosphere.



## **Pre-emptive Control Systems**

The Ethylene Oxide (EO) plant has been engineered to fail safe under all circumstances. See Below:

- 1) All pipe work and the EO chambers have been manufactured out of Stainless Steel.
- 2) The process is controlled by computer and continuously monitored 24 hours per day with each process recorded for later analysis. The system has 3 alarm levels for monitoring of parameters, first level is a warning alarm, the second, pauses the cycle and the third is abort cycle via the high temperature Thermal Oxidisers. The alarms are set specifically for different situations rather than an elevation system. For example a slight drop in temperature of the chamber would create a warning alarm rather than a pause or abort however a further drop would pause the cycle. A partial loss of vacuum would immediately abort the cycle via the high temperature Thermal Oxidisers.
- 3) The system has a series of sensors, temperature probes and pressure sensors, which if the process fails to meet any one of the programmed parameters the process is aborted and the Nitrogen and or Ethylene Oxide is evacuated direct to the high temperature burners and is incinerated.
- 4) Steritech have instituted a planned maintenance program throughout the facility to ensure regular, inspections and maintenance of equipment with all sensors and other probes calibrated every 6 to 12 months.
- 5) A full induction process for staff and contractors is in place with all staff receiving regular training which is fully documented. Detailed annual safety training of all process related personnel is conducted and assessed.
- 6) Personnel protective equipment include in-line full face mask independent air systems, rescue equipment include fully self-contained SCUBA equipment.
- 7) A full monitoring alarm display panel is used to advise of any issues and warn staff.



- 8) A detailed EO monitoring system of the immediate equipment areas is in place with alarms for appropriate low level detection.
- 9) Fire equipment includes, hose reels and hand held fire extinguishers.
- 10) Steritech have undertaken a series of audits, risk assessments and detailed reviews of all processes, the list is appended as Appendix 1
- 11) Development of the Pollution Incident Response Management Plan included a detailed pollution risk matrix; which is appended in Appendix 2
- 12) MSDS are located in a highly visible red fire box at the front gate for use by the NSW Fire Brigade

## **Maximum Quantities of Pollutants In use or Stored on Site**

Ethylene Oxide:

Licence:	5,000Kg
In use:	750Kg
Typical Storage:	1,500Kg to 3,000Kg

Nitrogen:

Licence:	15,000Litres
Storage:	15,000Ltres

Cobalt 60:

Licence:	3 million Cu (Curies)
In use: (Curies)	approx. 1 million Cu

## **Safety Equipment and Control Devices**

- 1) The process is controlled by computer and continuously monitored 24 hours per day with each process recorded for later analysis, both by computer and maned control rooms. The process has a series of sensors, temperature probes and pressure sensors, which if the process fails to meet any one of the programmed parameters set in the system the process is aborted and the Nitrogen and or Ethylene Oxide is evacuated direct to the high temperature burners and is incinerated.
- 2) The system is designed under all circumstances to fail safe, see pollution risk matrix for full details
- 3) Personnel protective equipment include in-line full face mask independent air systems, rescue equipment include fully self-





contained SCUBA equipment. The factory above each control room has a series of lights and siren alarms with full warning signage. Fire equipment includes, hose reels and hand held fire extinguishers  
4) A safety shower is located near the Ethylene Oxide store

## **Pollution Incident Management**

1) Pallet damaged during transition from delivery to warehouse storage;

Majority of palletised goods are non-hazardous, the material would be cleaned up and the incident reported to the client.

The small quantity of potentially hazardous goods are controlled with the issue of Material Safety Data Sheets prior to delivery, the potential hazardous nature is assessed prior to acceptance of the goods for sterilisation. If goods are damaged in transit prior to delivery, the client is informed, if the goods are damaged at Steritech the material is cleaned up using PPE and disposed of as per client and MSDS recommendations.

Liquid material is only a very small percentage of goods sterilised and are non-hazardous. A storm water shutoff valve has been fitted in the closest storm water drain to ensure no material hazardous or otherwise enters the storm water system.

2) Small leak of Ethylene Oxide:

- Full abort of process, Ethylene Oxide evacuated to high temperature incinerators
- Maintenance team and operators to identify leak using full P.P.E.
- Leak identified under direction of process engineers, repair leak
- System test to ensure integrity of repair
- Recommence process

3) Small leak of Nitrogen:

- Full abort of process, Nitrogen evacuated to high temperature incinerators, mixed with air at normal atmospheric pressure and incinerated



- Maintenance team and operators to identify leak using full P.P.E.
- Leak identified under direction of process engineers, repair leak
- System test to ensure integrity of repair
- Recommence process

4) Failure of Ethylene Oxide storage bottle through major connection leak or other circumstance:

- Major failure of the system, alarm sounds and all staff, contractors and visitors are to immediately evacuate the factory and assemble at the first evacuation point.
- Evacuation of the factory will be as per the Steritech Fire Evacuation Plan, ensure all persons have safely evacuated.
- If a person or persons are found to be missing, report their absence to the responding NSW Fire Brigade unit. Under no circumstances will staff re-enter the building.
- Institute emergency communication protocol, a copy of the Pollution Incident Response Management Plan and Communication Protocol to be held in the office and should be available at the emergency assembly point. NSW Fire Brigade to be contacted immediately and other contacts as per the communication plan
- All staff, contractors and visitors are to be moved further away, up wind of the factory, pending further advice from the NSW Fire Brigade Unit Station Officer

5) Failure of Nitrogen storage bottle through major connection leak or other circumstance:

- Major failure of the system, alarm sounds and all staff, contractors and visitors are to immediately evacuate the factory and assemble at the first evacuation point
- Evacuation of the factory will be as per the Steritech Fire Evacuation Plan, ensure all persons have safely evacuated.
- If a person or persons are found to be missing, report their absence to the responding NSW Fire Brigade unit. Under no circumstances will staff re-enter the building.
- Institute emergency communication protocol, a copy of the Pollution Incident Response Management Plan and



Communication Protocol to be held in the office and should be available at the emergency assembly point. NSW Fire Brigade to be contacted immediately and other contacts as per the communication plan

- All staff, contractors and visitors are to be moved further away, up wind of the factory, pending further advice from the NSW Fire Brigade Unit Station Office

6) Fire within the Warehouse:

- Steritech Emergency Fire Management Plan to be followed

## **Control of Pollutants**

1) Ethylene Oxide;

A. Small leak of Ethylene Oxide would be identified and controlled via an immediate system abort and evacuation of remaining Ethylene Oxide in process (35Kg) to the high temperature incinerators.

B. Major leak of Ethylene Oxide will result in a fire with explosive potential, the resulting fire will be toxic and will require the evacuation of the immediate area surrounding Steritech

C. Major leak of Ethylene Oxide will result in a fire with explosive potential, the resulting fire will be toxic and will require the evacuation of the immediate area surrounding Steritech

2) Nitrogen;

a. Small leak of Nitrogen would be identified and controlled via an immediate system abort and evacuation of remaining Nitrogen in the process mixed with air to the high temperature incinerators.

b. Failure of the large bottle storage would see the release of up to 15,000litres of Nitrogen to atmosphere



## **Steritech Co-ordinating Authority**

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## Communication Protocol

### Business Hours:

Immediate notification following this protocol will be made of an actual or potential pollution incident that may or is having an impact on the health, safety and local environment. The notification will be made by the NSW General Manager;

### After Business Hours:

- 1) Immediate notification to emergency services
- 2) Contact the NSW General Manager or The Group Engineer
- 3) All other notifications following the communication protocol will be made by the General Manager or Group Engineer.

### Communication:

The following agencies are to be contacted

Police, Fire and Ambulance as required;	000
Local stations;	
Police;      Fairfield Police Station	9728 8399
Wetherill Park Police Station	8288 5799
NSW Fire Brigade, local responding fire station;	
Smithfield Fire Station	9609 2343
Fairfield Fire Station & HAZMAT Station	9726 1139
EPA    Pollution report environment line;	131555
Ministry of Health, Camperdown Hospital environmental health;	9515 9420
WorkCover Hot Line;	13 10 50
Fairfield City Council;	9725 0222



Contact local businesses bordering Steritech:

**North;**

PB Packaging, 9 Widemere Road 8787 1900

**South;**

Biesse Australia 3 Widemere Road 9609 5355

Weing Australia 1B Widemere Road 9609 5911

**West;**

NYK Logistics (Australia) 3 Davis Road 9612 2100



## Appendix 1

List of Audits, Risk Assessments and Reports Commissioned by Steritech

- 1) Industry & Environmental consultants Pty Ltd  
Statement of Environmental Effects & Preliminary Hazard Analysis - April 2001
- 2) Noel Arnold & Associates  
Dangerous Goods Storage Risk Assessment - March 2007
- 3) Noel Arnold & Associates  
Requirements for the Proposed Ethylene Oxide Store
- 4) Steritech Pty Ltd  
Emission Monitoring Analysis - July 2007
- 5) Noel Arnold & Associates  
Hazard Audit report - August 2007
- 6) Steritech Pty Ltd  
J & J Ethylene Oxide Steriliser Hazard & Operability Study - September 2007
- 7) Coffey Environmental Specialists  
OH&S & E Review on ETO Plant Operations - September 2007
- 8) Coffey Environmental Specialists  
ETO Sterilisation Facility EH&S Audit - Jan 2008
- 9) C.C. Weston & Associates  
Statement of Environmental Effects - November 2009
- 10) BKB Training & Management Consultants  
Pollution Incident Response Management Plan - January 2013



## **Appendix 2**

1. SAFETY DATA SHEET Ethylene Oxide
2. SAFETY DATA SHEET Liquid Nitrogen





## **Appendix 3**

### Pollution Assessment Rick Matrix & Risk Matrix Tables



## **Appendix 4**

### Stormwater Drains