

Appendix G

Site closure plan

Closure Plan to achieve surrender of the Environmental Permit

Introduction

INVISTA Textiles (U.K.) Ltd provide the following Site Closure Plan (SCP) as required by sections 2.11.1 of Permit BM2063 namely:

“The Operator shall maintain and operate the Permitted Installation so as to prevent or minimise any pollution risk, including the generation of waste, on closure and decommissioning in particular by:-

- 2.11.1.1 attention to the design of new plant or equipment;
- 2.11.1.2 the maintenance of a record of any events which have, or might have, impacted on the condition of the site along with any further investigation or remediation work carried out; and
- 2.11.1.3 the maintenance of a site closure plan to demonstrate that the installation can be decommissioned avoiding any pollution risk and returning the site of operation to a satisfactory state.”

This SCP follows these requirements and details how the Site will be decommissioned to return it to a satisfactory state on the cessation of activity on the Site. Relevant EA guidance ^{1,2,3} has been consulted in compiling this closure plan.

The following issues have been addressed as part of the plan:

- Criteria for successful decommissioning
- Continuation of EHS practices necessary to ensure compliance with the permit until surrendered
- Programme of activities including decontamination of equipment and facilities
- Permit surrender – H5 Surrender report

Objectives and criteria for successful decommissioning

Following permanent cessation of activities on all, or part, of the site for a period of six months or greater, INVISTA will decommission and render safe all, or part of the site as required. The company will submit all tests and investigations as necessary to confirm to the EA that there is no continuing risk to the environment.

The criteria that will determine the successful implementation of this plan will include:

- adequate planning for cessation of activities;
- adequate manpower and financial resources to execute the SCP; and
- adequate aftercare of the facility prior to determining its long-term future if necessary.

In the event that continued operation of part or all of the INVISTA manufacturing process at Wilton is no longer practicable, the company will activate this SCP to ensure that the site and facilities are rendered safe and pose no threat to the environment.

This plan encompasses a number of areas:

- Activities necessary to maintain compliance
- Manufacturing equipment and facilities

- Utilities equipment and facilities
- Wastewater system and interface with SembCorp Utilities Limited (SembCorp), the Wilton site management company, and Northumbrian Water Limited (NWL), the water treatment plant operator
- Laboratory equipment and facilities
- Buildings

Continued Compliance with Permit conditions

Compliance with the requirements of the Environmental Permit must be demonstrated and assured until the Environment Agency has accepted the surrender of the Permit.

Monitoring

Monitoring of emissions to atmosphere will continue as long as the individual units continue to operate.

- **N1A and N1B** (NO_x analysers on nitric acid plants)
P21 will be supported to allow times of nitric acid plant start-ups and the bringing on line of abatement systems to be reported.
- **P2.** (All analysers on the stack of Thermex heaters N^{os} 3 and 4)
The Cemview package use for data processing will be supported.
- **S2.** (All analysers on COGA)
IP 21 will be supported to allow COGA data to be accessed. In addition IP21 will be maintained for COGA, AA, HMD and KA to allow times of venting to local stacks (**N3, S3** and **S4**) to be determined.

Monitoring of emissions to water will continue until the Environment Agency has accepted the surrender of the Permit.

- **W1, W4 and WALE.** (Flow meters, TOC, pH and other analysers and auto-samplers)
IP21 will be supported to allow on line data to be accessed for reporting to the Environment Agency.
- Daily composite samples will continue to be taken and analysed for current analytical suites. It may be possible, if the contract with NWL is terminated before the surrender of the Permit is accepted, to cease monitoring of the discharge from **WALE** before **W1** and **W4**.

All sump monitors and alarms (level, Cu, TOC, pH and conductivity) must be maintained until the Environment Agency has accepted the surrender of the Permit.

Reporting

Routine reports will be required, these will include:

- The Environment Agency half yearly report to end of June 2009 (forms A1, S1 and CA1).
 - The return to DEFRA for N₂O and NO_x for 2008.
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Programme of Activities

Plant Process Shutdown of Manufacturing Equipment and Facilities

There is a general presumption that process plant and associated facilities, including storage tanks, cooling towers, utilities and power equipment, sumps, drains and waste water treatment plant, laboratory equipment and waste management facilities will be left in a satisfactory condition with no risk of pollution of the environment.

Risk assessments will be undertaken to determine the risks and risk control measures necessary to safely carry out the work necessary to return the plant and facilities to a satisfactory condition.

Existing procedures and checklists will be used where possible to facilitate the risk assessment process.

Areas to be addressed will include:

- processes
- utilities
- equipment
- underground installations
- energy sources
- availability of waste treatment systems to handle additional levels of waste
- decontamination requirements and facilities e.g. wash bays etc.
- hazards from cutting and transportation
- potential contamination of concrete, soil and groundwater

Preparation for shutdown

The process shutdown will be planned to reduce chemical inventories to a minimum as far as possible. Specific consideration will be taken of hazardous materials such as cyclohexane, nitric acid, ammonia, methanol, copper nitrate and Thermex. Careful consideration will be taken of the sequencing of shut down to minimise the volume of residual materials.

The shutdown process will be carried out in a structured manner and all activities will be documented. Documentation will include marked up piping and instrumentation drawings (P&IDs) and, where appropriate, photographs showing the condition of lines, vessels and other process plant. Documentation may also include the results of sampling, previous reports from maintenance and inspection and the results of the Process Hazards Analysis (PHA) or risk assessments.

Detailed shutdown procedures and risk management control measures will be determined. Issues of potential environmental concern to be considered might include:

- Loose Lead-Based Paint.
- Mercury-Containing Devices (e.g., mercury switches, thermostats, thermometers, etc.).
- Batteries (e.g., lead-acid, nickel-cadmium, etc.).
- Potential Polychlorinated Biphenyl (PCB) Light Ballasts, transformers, capacitors, etc.
- Fluorescent Light Bulbs.
- Mercury Vapor Light Fixtures.

- Equipment which may contain ozone depleting substances (e.g., air conditioning units, refrigerators, water coolers, etc.).
- Oil-Containing Building Equipment (e.g., dock levellers, motors, fans, cranes, elevator pistons, etc.).
- Oil filled electrical equipment.
- Radioactive Elements (e.g., associated with emergency lighting, smoke alarms, level detectors etc.).
- Electrical Circuit Boards (may contain lead solder or other hazardous metals).
- Fire Extinguishers and Chemical Fire Suppression Systems.
- Debris/liquid in Pits, Sumps, Floor Drains, Trenches, and tank/line bottoms.
- Tanks and vessels
- Drum/Waste Storage Areas.
- Chemical Storage Areas.
- Specialty Gas Storage Areas,
- Areas of known historic spills or unknown floor staining.

Equipment cleaning

All manufacturing equipment will be emptied and cleaned of process / production materials. Appropriate cleaning procedures will be used to ensure that no residual product or process materials remain in the equipment that are likely to pose a threat to both personnel and the environment. Preferred methods of disposal and treatment for any residue will form part of the risk assessment process.

All storage tanks will be checked to ensure that they are clean. Storage tank bunds will be washed and inspected to ensure that there are no residual materials present. When all vessels within a bunded or kerbed area have been decontaminated, and the bund cleaned, necessary actions will be taken to ensure the facility is left in a safe condition and to avoid accumulation of rainwater.

Radioactive sources

All radioactive sources will be removed and stored or disposed of in accordance with regulatory requirements and under the guidance of the INVISTA Radiation Protection Adviser.

Materials Removal

The generic process used for the shutdown of each aspect of the site will be to de-burden, and dispose of the resulting materials and document the results. Materials will be processed where possible, where this is not possible attempts will be made to transfer these materials to other INVISTA sites or return them to their original suppliers. Disposal of such materials as waste will be used as a last resort. Wastes will be dealt with in accordance with all regulatory requirements, fully characterised and will only be sent to appropriately licensed facilities. All work will be carried out using standard INVISTA safe work processes and documentation. Particular care will be

taken to avoid losses of containment during de-burdening, decontamination and waste disposal operations.

Discussions will be held with NWL to review the implications of varying effluent loads and component ratios on the Bran Sands waste water treatment plant during the decommissioning period. Regular performance reviews will be carried out with NWL during this period. While discharges to the C drain are not expected similar discussions will be held with Sembcorp Ltd.

Data retention, both paper and electronic, will be reviewed to ensure continued compliance with the regulatory requirements for duty of care documentation.

Utilities Equipment and Facilities

It may be necessary to maintain most of the utilities systems in operation until all of the remaining systems have been decommissioned. The utilities systems on site include:

- Compressed air system
- Steam system
- Electricity distribution and supply
- Chillers and air conditioning systems
- H&V systems
- Cooling towers
- Fire detection, firewater and fire suppression systems
- Water Supply for process and potable water.
- Communication systems e.g. radios and phone network

Compressed Air and Steam system

It is likely that the air and steam systems will be needed to allow continued operation and controlled shutdown of the plant. The phased shutdown of the systems will be determined in the risk assessment process which will determine when and how the system might be de-energised and left in a safe condition, or if there are parts of the system which will need to remain “live” in order to support ongoing activity.

Consideration will also be given to the need to drain the systems of water to prevent corrosion and frost damage. The provision of trace heating or alternative measures to ensure frost protection is effective will also be determined should the system need to remain live.

Electricity Distribution and Supply

If applicable, electrical equipment will be shutdown and stored as per the equipment manufacturers instructions. Electrical circuits that need to be made redundant to comply with regulatory requirements, will be isolated and effectively disconnected from the system. Consideration will be given to doing this from the SembCorp 11kV feeders & associated pilot cables however, any sump / drain pumps and any associated control / instrumentation likely to be required to maintain any future activity will be accounted for. Other equipment which will need to be considered and for which removal or maintenance plans may be required include:

- Batteries inside instrumentation, DCS, HIMA, UPS, Toxic & Fire alarm & detection systems, emergency lighting, switching systems, etc
- E & I Mercury switches - in older generation control panels
- Lighting especially outside – Phosphorus, mercury vapour, etc.
- HV Transformers – do not contain PCBs but may need oil draining
- Instrumentation - older generation, Pneumerstats or capillary tubes may have oil inside or contain process fluids
- Lifts should be restored to resting position and not suspended

Chillers, Air Conditioning Equipment and H&V

All ODS containing equipment should be identified and provisions made for proper evacuation, recovery and disposition of any refrigerants. Licensed contractors will be employed for this activity in accordance with regulatory requirements . If necessary, H&V cooling coils will be drained of water and ducts cleaned to remove possible fuel source. Measures will be taken to close off openings to prevent ingress of birds and vermin if necessary.

Cooling Towers

Measures that will be considered in shut down of cooling towers include:

- disposal of water treatment chemicals and decontamination of water treatment lines;
- the condition of the packing within the tower and possible pollution and fire risk;
- the removal of sludge from the cooling tower pond; and
- control of rainwater accumulation in sumps and ponds.

Notification will be made to the local authority when cooling towers have been decommissioned and brought to a satisfactory state.

Fire Detection, Fire Water and Fire Suppression Systems

It is envisaged that the fire detection and alarm systems will remain operational throughout the decommissioning period and until combustible materials have been removed from the site. Consideration will be given to continued operation of the systems where combustible materials may still remain. Plans for shutdown of the system will be determined by the risk assessment process.

Advice will be taken from fire protection experts and the fire authorities on the appropriate level of cover which will need to remain in place should the plant structures remain standing. This will include provision of frost protection if necessary. Collaboration with SembCorp will be required to consider the operation of the fire water system which is connected to the Wilton Site fire main

Water Supply for Process and Potable Water.

Risk control measures for the water supply system will be addressed once it has been determined that a water supply to a particular plant area or building is no longer necessary. Such measures may include isolating and draining the system to prevent legionella build up and frost damage. Discussion on isolation of the system from the Wilton Site distribution system will be done in consultation with SembCorp. Where it is deemed necessary that a continued water supply is essential for future activity and maintenance, or where it is not possible to isolate the system, a suitable management plan will be put in place.

Communication Systems

All communication systems will be maintained in support of decommissioning activities and for emergency response as required. The decommissioning reuse or disposal of the equipment itself and the surrender of any associated licences will be in accordance with regulatory requirements.

Waste Water Systems

All necessary controls and monitoring facilities will be retained and remain operational throughout the decommissioning period in order to maintain compliance with the permit requirements until the permit is surrendered.

The emptying of all storm water drains and drains and sumps for process wastewater will form part of the risk assessment process. The need for cleaning these to remove potentially polluting residues will be reviewed. Options such as sealing, or filling in these drains and any effluent pipes after cleaning will also be considered where appropriate. All materials generated from this work will be collected, analyzed as necessary and disposed of properly. The status of all drains, sumps, and pits, will be documented on the plans of the drains and underground piping.

Waste water treatment at NWL and effluent discharge to SembCorp will continue throughout the decommissioning and clean-up process. Once certain processes are shutdown the composition of the wastewater will shift and provisions will be made for neutralization and treatment. This will be discussed and agreed in advance with NWL and Sembcorp.

A strategy to deal with future storm water from the site post-closure will also be developed.

Laboratory Facilities and Equipment

Laboratory operations required for the ongoing monitoring in support of the permit will be maintained or arrangements will be made to have the necessary analysis for this or for waste characterisation carried out by an alternative service provider.

All laboratory instrumentation shall be sold, sent to another INVISTA plant for further use or disposed of according to any regulatory requirements. . Laboratory reagents (both hazardous and non-hazardous) that cannot be reused elsewhere, or returned to the supplier, will be disposed of in accordance with waste regulatory requirements..

Buildings

All buildings will either be left intact and secure, or totally, or partially, dismantled or demolished, depending on their condition or potential for future use. Following decommissioning of the facilities, all buildings that are not to be demolished will be secured to prevent unauthorised entry. A security program will be implemented to ensure that buildings remaining are regularly checked for unauthorized access.

A maintenance program will be put in place to ensure that remaining buildings do not decay or present an unacceptable nuisance in the area.

Asbestos

The site asbestos register will be reviewed to ensure it is up to date, recording the position and condition of the asbestos. Where necessary, asbestos in poor, or unstable condition, will be removed and disposed off in accordance with regulatory requirements.

If it is decided to leave in place that asbestos, which is secure and in good condition, then INVISTA will put in place a suitable inspection and maintenance plan to ensure integrity of the materials. This plan will include procedures for access; responsibilities for inspection and repairs; responsibilities for removal and disposal; updates to the asbestos register and issuance of any necessary reports required to keep records up to date.

All documents relating to asbestos will be retained and made available for any ongoing maintenance activity and any future demolition work.

Site Security

Following cessation of on site activities, the site will be secured against unauthorised entry. Roadways will be retained to enable movement by security or other site visitors. Actions will be undertaken to ensure that the site does not present an unacceptable nuisance in the area. A security program will be implemented to ensure that the site is regularly patrolled and checked for unauthorised access.

Dismantling and Demolition

In the event that any dismantling and/or demolition work will be carried out, INVISTA will make all notifications necessary under the Construction Design and Management regulations.

Work will be carried out according to INVISTA safe work standards and the Wilton Site procedures including WSP 1406 – The Management of Demolition and Dismantling.

Prior to any demolition consideration will be given to the following:

- Provision of spill kits
- Provision of the site drainage plan to the contractors and posting around the site at key locations e.g. beneath spill kit lids
- Prevention of discharges to the surface water and site drainage systems. Particular reference will be made to the guidance given in IPPC Reference Document on Best Available Techniques in the Large Volume Organic Chemical Industry published by the European Commission.
- A Noise Management Plan will be formulated in order to ensure that noise levels arising from site decommissioning/ demolition works are minimised as far as practicable. Noise and vibration will be taken into account when considering best available working methods and selection of plant appropriate for the required works.
- A Dust Management Plan will be formulated in order to address any potential issues and establish mitigation measures, to include:
 - o damping down on-site during periods of dry weather;
 - o use of covered wagons and skips for transportation of materials to and from the site, which have the potential to cause dust or be deposited on public highways; and
 - o wheel washing of all construction vehicles leaving the site and accessing the public highway, where necessary.

Surrender of the Permit

A Site Condition Report will be prepared to demonstrate that soil and groundwater below the site is not a pollution risk and is in a satisfactory state, taking into account the state of the site before the Environmental Permit was issued.

The Site Condition Report will contain:

- a) A synopsis of the original condition reports which were prepared in 2002.
- b) Records of the design, construction, inspection, monitoring and failure of pollution prevention measures including bunds, curbs, hardstands and drains.
- c) A summary of any pollution incidents which have may have damaged land and /or groundwater and the results of any investigation and resulting remedial works
- d) Results of any soil and water quality monitoring
- e) A description of the decommissioning process and a demonstration that all sources of pollution have been removed.

- f) A demonstration that the decommissioning process has not resulted in contamination of soil and groundwater.
- g) The results, if deemed necessary, of any site investigations carried out to provide reference data in support of the Site Condition Report.

The Condition Report will be submitted using the template in the Environment Agency's H5 Guidance Document.

Surrender of the permit will also be in accordance with the DEFRA Regulatory Guidance Series No. EPR 9 – Demonstrating land and groundwater are protected to assist the surrender of an environmental permit.

References

1. Section 2.11 of the IPPC Guidance Note (IPPC S4.02, 2003)
2. EA – “How to comply with your environmental permit – Getting the Basics Right”
3. H5 – SCR Guide for Applicants v2