

Multi-Product Protocol (MPP) – West Thurrock Site

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Purpose:

In order to enable Industrial Chemicals Ltd to exploit new market opportunities quickly it has been necessary to establish a Multi-Product Protocol that will be used to demonstrate to the Environment Agency that:

- 1 The proposed manufacture of any new product falls within the scope of processes defined in the site's PPC Permit and any variation since applied for.
- 2 The introduction of the new product will have negligible effect on the overall environmental impact from operations undertaken on the site.

Three categories of change are recognised in the relevant EA guidance note and application of this protocol will assist Industrial Chemicals Ltd and the Environment Agency in understanding which of the following change categories is relevant:

- 1 A change that is broadly within the scope of the original application, as in the reactions are the same, the equipment used has not changed but there maybe a change in the raw materials used and the final product produced, but still falling under the umbrella of Schedule 1, Part 1, of The Pollution Prevention and Control (England and Wales) Regulations 2000 (SI1973), Section 4.1 Part A (1)(b). This requires an audit both pre and post production to be carried out and sent to the Environment Agency Inspector. The audit is to include the point mention in the rest of this document and for the first run of any product a commissioning report is also required, again copies to the Environment Agency Inspector.
- 2 A change broadly within the scope of the original application but where, due to the nature of the change, some environmental impact can be foreseen. This will require notification to the Agency and agreement, in writing before the change can take place (14 days notice required).
- 3 A change that is outside the scope of the application. A formal variation is required to demonstrate BAT for the proposed change and to justify any environmental impact (minimum 3 months notice required).

Procedure:

1. No changes to this Multi-Product Protocol shall be made without prior approval from the Environmental Manager with the help of the Engineering Manager. If they suspect that the change may be significant then they will inform the EA of the change and must obtain agreement in writing before such a change is authorised.
2. Procedures exist for the introduction of new products, see Quality Manual Procedure 21: Design, Development and Installation. When considering the introduction of a new product, the potential environmental impacts of the proposed manufacturing process are considered and that any written authority to proceed from the EA or permit variation, has been granted before manufacture (either trial or commercial) is scheduled.

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3. As the company's production portfolio changes with an increase for the potential of toll manufacturing for customers located outside of the current supply base of detergents and water treatment chemicals. With this in mind, Form 0016 from the Quality System – Short Campaign Toll Manufacturing Agreement is to be completed whenever the company is approached to manufacture any product not mentioned in the original permit application. This document details the requirements by both Industrial Chemicals and also the Client.

The Environmental Manager using the MPP as a guide will assess which of the three categories of change defined above is applicable to the proposed new process and record this decision together with a justification for the decision. They will also inform the EA (PPC Permit, Condition 1.5.1). An environmental risk assessment will be carried for each new product, form 1046 details the required areas to be assessed. Health and Safety risk assessments are also to be carried out as well.

This protocol shall apply to all manufacturing operations carried out at Industrial Chemicals Ltd (Stoneness Road Organics facility) in connection with the introduction of new products (or to substantially changed routes to existing products).

The company will have to demonstrate that any new product or process lies within the scope of the PPC Permit as outlined in sections below.

1 Site Report

The site report, (PPC application, document ref. no. BJ7298IF), submitted with the original PPC Permit application describes the site history and hydrogeology. The potential for ground and ground water contamination has been considered from the viewpoint of the risk potential posed from materials on-site and the processes and chemistry operated. Before a new process is introduced it must be confirmed that this does not introduce a potential new source of ground contamination and that the operations involved do not give rise to additional pathways for land contamination (i.e. purchase of a raw material in bulk, which then has to be decanted into drums).

2 “Worst case” Environmental Assessment

2.1 Noise / Odour

The processes that are currently operated under the permit had been assessed as insignificant using the methodology current at the time of the permit application. Before introducing any new process / product it must be confirmed that this new process/product will not produce any significant odour or add to the current noise levels

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2.2 Liquid/Aqueous emissions

The only direct emission route to water from the site is via the trade effluent sewer and this discharge is subject to conditions specified in its consent with the sewage undertaker. When the original application was made, the use of H1 methodology was not a requirement, but an environmental assessment was completed and can be seen in B4.1 of the original application. Before introducing any new process it must be confirmed that this assessment is still valid. Then future processes will require assessment before going to the next stage of planning to determine if the original assessment still stands.

2.3 Emissions to Air

Emissions to air have been assessed as insignificant following application of current abatement procedures or, where not insignificant, limits have been set in the permit. Before introducing any new process it must be confirmed that this assessment will remain valid.

2.4 Environmental Impact on Habitat & SSSIs

An assessment was included in the PPC application, which indicates that the emissions from the site would have an insignificant environmental impact on the Habitat. Before introducing any new process it must be confirmed that this assessment will remain valid. The assessment shall evaluate, for example, the use of a substance that is particularly dangerous to the aquatic environment. An environmental risk assessment will be carried before each product is manufactured for the first time, to ensure that there is no risk to the environment. Subsequently this will be reviewed after the first manufacturing has been completed and then before any further batches are required/ordered.

2.5 Waste Generation, Storage and Disposal

The PPC application details a number of procedures relating to the storage and disposal of waste and others that relate to waste minimisation. Before introducing any new process it must be confirmed that these procedures remain adequate. If this is not the case, then measures will be introduced to ensure that what waste is minimal and will then be subject to a waste minimisation review at the end of production.

2.6 Accidents

The effects of abnormal operation and accidents and their environmental consequences have been considered and are detailed in a matrix within the site's PPC application (ref BJ7298IF). Before any new process is introduced on to the site it must be confirmed that no significant additional risks are being introduced and that the safeguards in place to address the risks originally identified are not being compromised. A standard H&S risk assessment will

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be carried out each time a new raw material and product is introduced to ensure that all staff have had the necessary training.

3 BAT Justification Review

The IPPC application (ref BJ7298IF) identifies the generic classes of reaction, which are routinely undertaken on site in process 1 and process 2. These reactions are defined in Schedule 1, Part 1, of The Pollution Prevention and Control (England and Wales) Regulations 2000 (SI1973), Section 4.1 Part A(1) b, as activities which produce salts. For the scale and range of chemistries carried out on the Stoneness Road Organics site, the application provides a justification of BAT regarding aspects of Management Control and In-Process Control. These aspects are detailed below and must be reviewed before any new process is introduced to determine whether the proposed new process would have any impact on the BAT justification.

3.1 Management, Training, Maintenance and Technical Support Systems

Effective environmental management of the site is controlled through a number of procedures. The key ones of which are: -

- a The Preparation, Issue, Checking, Archiving and Modification of Batch Manufacturing Records.
- b Wastes for Offsite Disposal.
- c Environmental Control of Batch Processes.
- d Monitoring and Reporting of Environmental Performance.
- e Laboratory Evaluation and Development of a New Product.

Before a process is introduced on to the plant a production instruction record (PIR) is prepared and reviewed. Risk assessments and COSHH reviews are undertaken and plant personnel trained.

Procedure for Planned Maintenance ensures that all critical process equipment is subject to planned preventative maintenance in accordance with manufacturers' recommendations and site requirements.

3.2 Raw Materials

The quantity of raw materials to be ordered for a process is determined by reference to the chemistry and the anticipated yields to provide the desired volume of finished product requested by the customer. For new processes, the quantity ordered, would also contain a

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contingency to allow for any difficulties that may arise during the processing campaign. Any overage of final product resulting from this approach, is offered to the customer, who will in the majority of cases, agree to take it.

Unused raw materials are retained at the end of a campaign if there is confidence that there will be future requirements for the material. If it is unlikely that there will be any further demand, then the material is offered back to the supplier or sent for approved off-site disposal.

3.3 Control of Wastes

Before any new process is introduced on to the plant a full assessment is undertaken in accordance with the procedure. As part of this assessment all wastes are identified and suitable disposal routes determined.

The control of waste on site and the mechanism for its subsequent disposal off-site is detailed in procedure for waste for off-site disposal.

Where practical, certain waste streams are treated on site and recycled. In other circumstances, discussions are held with the waste disposal companies to ensure that, where possible, waste material is treated in the most environmentally acceptable manner.

3.4 Campaign Schedules

The length and timing of a manufacturing campaign is generally governed by delivery schedules and equipment availability. Production Planning meetings are held weekly to facilitate this system. It is more efficient and cost effective to conduct a single uninterrupted campaign wherever possible and consequently waste arising from changeovers is minimised. Equipment to be used during a campaign is not normally cleaned between batches unless there is a safety or quality issue. Instructions to this effect are included in the batch manufacturing records for the various processes.

Records detailing the quantity and quality of the effluent discharged from the site and the emissions from the discharge stacks are maintained in accordance with the procedure. Records of the quantity and composition of all waste streams are kept in accordance with the waste procedure and the engineering department maintains detailed records of all engineering changes.

3.5 Inter-campaign Cleaning

Inter-campaign cleaning requirements vary from one process to another and require different cleaning methods and reagents. For the majority of the potential products, just rinsing the storage tanks and reactor with water will suffice. This liquid is then tested, stored and used the next time that that product is manufactured. This then reduces the volume of

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water required for dilution the next time that product is manufactured. However if it also suitable for use in another product, it can also be used for this was well.

3.6 Review of Plant Modifications

The Environmental Manager in conjunction with the production supervisor and engineer will ensure that any changes to the plant or process have been implemented in accordance with the requirements of the new process. These changes will be reviewed to ensure no adverse environmental impact will arise as a result of changes being made during either routine or foreseeable non-routine manufacturing.

Where plant configurations, or connections, are unique to a particular process, and are critical to its safe and efficient operation, then such factors will be clearly referenced in the Method of Manufacture and are referenced in the plant operating procedures.

3.7 Monitoring and Emission Returns

Details of the measurement techniques used on site are detailed in the PPC application. This procedure describes the equipment used to monitor emissions, the calibration of this equipment and the reporting of results. The nature and level of monitoring undertaken on site is reviewed prior to the introduction of any new process and additional monitoring will be introduced if required.

3.8 Technology Transfer from the Laboratory to Production

A new process passes through various phases of development in the laboratory before it is introduced on to the plant. A package of information is collected together for each stage of the process before it is transferred from the laboratory to the plant, which will include

- Hazard information relating to all raw materials, intermediates, products and waste streams.
- Data on all reaction exotherms/endotherms and drying steps required.
- Mass balance information (including all emissions and waste streams).
- Waste stream composition and identified routes for disposal.

3.9 Out of Specification Material

Materials failing to meet specification requirements are subject to the non-conforming supplies/products procedures. Quality Manual references: - Procedure No 5 – Goods

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Inwards, and Procedure No 8 – Non-Conforming Product, each of which detail the procedures to be followed and the Forms to be used.

Typically out of specification raw materials are returned to the supplier and a replacement material sought in accordance with the "Goods Inwards" procedure.

Intermediates and finished products failing to meet specification may be purified by re-processing or re-working. Those, which cannot be purified, are disposed of in a similar way to failing raw materials. Finished products failing to meet specification requirements may on occasion be accepted by the customer to prevent unnecessary reprocessing or disposal.

3.10 Control of Effluent and Other Wastes and Incompatibility Issues

Effluent and other wastes are controlled by ensuring non-compatible waste streams are not mixed and bulk aqueous waste tank contents are primarily from a single source.

Processes with significant gaseous emissions are routed through a fume scrubbing system prior to being discharged.

3.11 Campaign Reviews

A campaign review is held at the end of a manufacturing campaign. This review is based upon the completed production instruction record. It reviews any deviations from the proposed method and look at the results in terms of yield, quality, energy consumption, mass balance and delivery against forecast. Environmental performance will also be reviewed in terms of effectiveness of abatement systems and opportunities for waste minimisation.

Recommendations arising out of this review will be documented and implemented prior to commencement of the next campaign.