EMS Site Maintenance Plan

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1 PURPOSE

This procedure has been established to describe how PB Gelatins manage and deliver a programme of planned and reactive plant maintenance at the Treforest site. Procedures and plans have been developed to comply with: *ISO 14001 standard clause 4.4.6 Operation control.*

2 RECORDS

The location of all records generated by the Site Maintenance Plan are indicated within the relevant section of this document. All records will be retained until surrender of the Environmental Permit.

3 PREVENTATIVE MAINTENANCE PLAN

The PB Gelatins site is subject to a preventive maintenance plan that is designed to ensure the potential for environmental impact from the sites activities is controlled in order to meet the EMS Policy commitment to prevent pollution.

3.1 Failure Mode Effect Analysis

In order to develop the preventative maintenance plan, Failure Mode Effect Analysis (FMEA) has been used to identify critical plant and equipment and assess the impact and likelihood of failure on Production, Safety, Quality and Environment.

In order to assess the risk associated with the failure of critical equipment, the following six factors were considered during the FMEA:

- The effect of failure of critical equipment upon Production
- The effect of failure of critical equipment upon Safety
- The effect of failure of critical equipment upon Quality
- The effect of failure of critical equipment upon Environment
- The likelihood of failure
- The ability to detect failure before loss occurs

Each of the above risk factors is then assessed against a scoring system 1 to 10, with 1 representing a very low risk and 10, a very high risk. The score is then multiplied together to give an overall rating of risk.
Production x Safety x Quality x Environmental x Likelihood x Detection = Risk.

3.2 Planning Preventive Maintenance

Once the level of risk has been assessed, all equipment with a potential for environmental impact will be subject to servicing, maintenance or inspection on a periodic basis. The frequency of maintenance and the maintenance requirements, are based upon:

- Risk of failure (see FMEA, above)
- Legal requirements
- On site knowledge and experience of failure
- Manufacturer's recommendation
- Standard industry best practice

- The frequency of maintenance the basis for the period and the type of maintenance identified by utilising the FMEA system criteria discussed above.

3.3 Implementing Planned Preventive Maintenance

Once the preventative maintenance regime has been identified for each critical item of equipment, the maintenance plan is created and placed onto the site planned preventive maintenance system. (file ref: K:\DPTMS\TFENG\PRV\Company\ENGINEERING\2.Maintenance department\1.Maintenance work\01 PPM).

The maintenance plan will identify:

- the type of maintenance activity
- the frequency of the maintenance activity
- the maintenance work instruction giving a description of the activity
- the last maintenance activity date
- the next planned maintenance activity date
- the status of the planned maintenance activity
- the level of overdue status if applicable
- the record sheet to be used

3.4 Maintenance Work Instructions

Each planned maintenance activity will be carried out in accordance with the instructions detailed in the appropriate maintenance work instruction. Documents are stored within the Quality Management System (file ref: K:\DPTMS\TFQUAL\PUB\Controlled Documents\2. Controlled Documents) and controlled copies are retained in the maintenance supervisors office.

4 HDPE TANK INSTALLATION, MONITORING & INSPECTION

4.1 Installation of New Bulk Storage Tanks

All new bulk storage tanks will be specified, designed and constructed in accordance with an appropriate standard such as BS EN 13575, BS EN 12573, BS EN ISO 17786 or BS EN 13341. Designs will take into account compatibility between the thermoplastic material and the contents, working temperature, anticipated loading by the contents and external factors such as wind, personnel and snow loading and ancillary equipment attached to the tank. Each new tank will be certified with a manufacturers design life based upon the tanks construction and intended contents.

Proposed new tank installations (including secondary containment, hard standing, ancillary equipment, pipe work, instrumentation etc) will be specified and designed to meet the recommendations contained within CIRIA C736 (2014) *Containment systems for the prevention of pollution*. Tank installation will follow the manufactures instructions and guidance from HSE publication PM86 *Thermoplastic tank integrity management (paragraphs 28-36).*

4.2 Pre-Commissioning Examination

A pre-commissioning examination provides a record of the as-new condition of the tank. This sets a baseline against which degradation can be judged when assessing the results of future examinations. It also confirms that no damage has been caused to the unit before first use.

After installation and before use, a competent person will inspect the unit to measure and record the tank dimensions and confirm within the examination report that:

- The tank is manufactured to the required standard and is fit for purpose;
- Temperature and loading parameters are correct;
- The characteristics of the foundations, hold down equipment and pipe workloads are correct; and
- Appropriate valves, plugs, drains etc and any instrumentation have been fitted.

4.3 Operation of Bulk Storage Tanks

PB Gelatins will ensure that existing bulk storage tank installations are assessed against the requirements of "CIRIA C736 (2014). *Containment systems for the prevention of pollution"* Where differences are identified PB Gelatins will schedule and implement an improvement plan for upgrading the tank installations storage areas. (file ref: K:\GROUP\GENERAL\ENVIRONMENT\1. Environmental Permit\Environmental Improvement Actions) Thermoplastic tanks will be operated within defined safe operating limits, based on the original design or a revised duty verified by a competent person[1]. Should a tank be subjected to conditions outside the defined operating limits, a review of the possible effects arising from the deviation will be carried out by a competent person to determine whether the tank remains fit for service.

4.4 Monitoring and inspections

4.4.1 Weekly Visual External Checks

Routine weekly visual external checks of all thermoplastic tanks and their secondary containment will be carried out by operating staff trained to identify early indicators of loss of integrity.

4.4.2 Annual External Inspection

Annual external inspections will be undertaken of all thermoplastic bulk chemical storage tanks by a competent person. External examination will be carried out in accordance with HSE publication PM86 *Thermoplastic tank integrity management* and in dry weather to aid detection of weeps or leaks. The tank inspector should decide whether the external examination is sufficient or if further examination, including internal examination, is necessary to ensure the continued safe operation of the tank. The examination report should indicate continued fitness for purpose of the vessel or tank until the next examination date, which should be stated or alternatively indicate any remedial work necessary for continued safe use.

4.5 Examination of Vessel after Consequences of Failure

[1] Throughout section 4, the term competent person shall mean: An independent third party agency, deemed competent by virtue of qualification, training and experience. Typically this may be an insurance assessor, a tank manufacturer's representative or suitably qualified engineer.

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In the event of a loss of containment incident thermoplastic vessels will be examined by a competent person to determine the failure mode. In line with the accident management plan.

4.6 End of Design Life

It is PB Gelatins policy to renew each tank at the end of its designated design life although in exceptional circumstances operation beyond the design life may be acceptable with written consent by a competent person based upon an extension of life inspection and assessment.

5 EFFLUENT SYSTEMS

The effluent system pipes, valves, drains, manholes and tanks will be monitored to ensure their integrity remains at a level so as to not cause pollution and to comply with the monitoring requirements of the Environment Permit.

Table 1 Effluent System Inspection Plan

Inspection	Frequency	Method	Record
Effluent discharge manholes	Annually	Visual inspection by drainage surveyors	Report by drainage surveyors retained by Eng Man
Effluent discharge drainage system	Annually	CCTV inspection by drainage surveyors	Report by drainage surveyors retained by Eng Man
Effluent transfer pipe work	Annually	CCTV Inspection by drainage surveyors	Report by drainage surveyors retained by Eng Man
Effluent transfer station	Weekly	Visual inspection. Procedure MWI 083	Maint log book - effluent daily check
DAF sludge tank, pipe work, pumps and bund	Weekly (& before sludge transfer)	Visual inspection Procedure MWI 084	Work order retained in SAP
DAF balance tank pipe work, pumps and bund	Weekly	Visual inspection. Procedure MWI 084	Work order retained in SAP
DAF balance tank rotary screen	Weekly	Visual inspection and clean. Procedure MWI 084	Work order retained in SAP
DAF air scrubber unit	Monthly	Procedure MWI 066	Record retained by Eng Man
Drains around bone skip	Daily	Inspection and clean. Procedure WPI 37.4	N/a

6 REFRIGERANT GASES

Refrigerant gases are used on the site to cool processes and ensure all process parameters are kept at the correct temperature. All equipment containing refrigerant gases are maintained and tested to ensure no leaks occur during their operation. All maintenance will be conducted by a REFCOM[2] registered contractor.

Table 2 Refrigerant Gases, Locations and Monitoring Plan

[2] The Refcom Register of Companies Competent to Manage Refrigerants

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Location	Equipment	Refrigerant Gas	Gas Quantity	Leak Test	Maintenance
A21	Hitachi	R410A	6.0	Annually	Annually
A21	Daikin	R410A	1.7	Not required	Annually
A21	Mitsubishi	R410A	2.6	Not required	Annually
Labs	Hitachi	R410A	3.6	Annually	Annually
Labs	Mitsubishi	R410A	1.6	Not required	Annually
Labs	York	R22	1.5	Not required	Annually
Labs	Daikin	R410A	2.75	Not required	Annually
Labs	Bloom bath	R134	2.0KG	Not required	Annually

7 OTHER EQUIPMENT MAINTENANCE

Where storage tanks, pipe work, pumps, bunds and level sensors are utilised as part of the controls for the prevention of pollution such equipment will be inspected, maintained and calibrated so as to prevent incidents of failure and possible subsequent pollution.

8 ROLES AND RESPONSIBILITIES

PB Gelatins is committed to managing effectively the off-site impacts of emissions from the PBG Installation. This commitment extends from policies produced at director level, to the resources available to the competent site personnel. This section describes the responsibility for the management and operation of the PBG Installation.

PB Gelatins conducts its operations under its Management System Manual, which has been developed to meet the requirements of BS EN ISO 14001:2004 & BS EN 9001:2008. The Management System Manual forms an integral part of the Management System, and includes Operating Standards and Company Procedures which are understood and effectively maintained at all levels within the company.

The company has appointed managers with the executive authority and responsibility for implementing the Management System. Work instructions, job descriptions and procedures exist for critical areas of the Company's activity and been issued to or made available to personnel responsible for undertaking these tasks. PBG has a well-defined and formally documented management structure for managing the impacts from the PBG Installation. The managers are also responsible for monitoring and managing all activities under the Company's control to improve environmental performance.

Further information on the role of staff members and responsibility for monitoring is given below:

- The PB Gelatins Installation is the responsibility of the Operations Manager.
- Routine preventative maintenance and reactive breakdown maintenance is the responsibility of the Engineering Manager and each of the facility supervisors.

- Each individual facility supervisor, who reports to the Production Manager, is responsible for the site operatives who will work shifts to cover the operational hours of the site. During night hours and weekends a number of staff on-call are available.
- Operational staff members at the PBG Installation site are responsible for maintaining an awareness of general process performance during their day-to-day activities on the site.
- Staff are instructed to note and observe any unusual monitoring data occurrences and to report these to the Facility Supervisor or Production Manager without delay.

9 TRAINING AND COMPETENCE

9.1 General Procedures for Training and Competency of Staff

PB Gelatins recognizes the importance of ensuring that all employees are trained and competent to carry out their roles. The company will therefore provide sufficient resources to ensure they have the required knowledge, skills and expertise to carry out their duties. This includes their roles and responsibilities in complying with the Environmental Permit and the Environmental Management System

9.2 Training and Competency of Operational Staff at the PBG Installation

Employees responsible for the operation, maintenance or repair of monitoring critical equipment will be trained and competent to do so. In order to minimise risk of emissions, training will include:

- general awareness of responsibilities for equipment;
- minimizing potential monitoring issues emissions on start-up and shut-down;
- actions to minimise emissions during abnormal conditions.

9.3 Training Records

Staff competency and training requirements are assessed by site management and supervisors and will be reviewed and formally recorded within the Training Matrix (file ref: K:\DPTMS\TFQUAL\PUB\Controlled Documents)

10 PREVENTIVE MAINTENANCE PLAN UPDATE AND REVIEW

This Preventive Maintenance Plan is a controlled document, and forms part of the PB Gelatins Environmental Management System. The specification for the periodic review and update of the Plan will be set out within the PB Gelatins Management System and will take place on an annual basis, as a minimum. The Preventive Maintenance Plan is also intended to be a live document which serves as a reference during day to day operations, and as such will be updated on a more frequent basis should the following occur:

- Significant changes are made to the plant or operational practices
- There is a change to the management structure, designation of responsibility or training provision
- The NRW requests that the PMP is updated, in their role as regulator
- Results are noted, which on subsequent investigation results in the identification of further control measures or remedial actions, in addition to those set out within this PMP.