## **Environment Agency permitting decisions**

## Bespoke permit

We have decided to grant the permit for BASF Metals Recycling Limited operated by BASF Metals Recycling Limited.

The permit number is EPR/FP3830DK/A001.

We consider in reaching that decision we have taken into account all relevant considerations and legal requirements and that the permit will ensure that the appropriate level of environmental protection is provided.

#### **Purpose of this document**

This decision document:

- explains how the application has been determined
- provides a record of the decision-making process
- shows how all relevant factors have been taken into account
- justifies the specific conditions in the permit other than those in our generic permit template.

Unless the decision document specifies otherwise we have accepted the applicant's proposals.

#### Structure of this document

- Description of main features of the installation
- Key issues
- Annex 1 the decision checklist
- Annex 2 the consultation and web publicising responses

#### Description of the main features of the Installation

BASF Metals Recycling Limited (the operator) operates an Installation to recover precious metals (namely Platinum, Palladium and Rhodium) from automotive catalysts. The processing of the automotive catalysts is split into 2 stages, a de-canning facility for removing the scrap ferrous cans from the catalyst material, followed by grinding in a number of milling facilities to physically crush the catalysts into powder as a preparatory step prior to shipping to a sister plant for smelting.

In some of the catalytic converters there is a support mat made from refractory ceramic fibre (RCF). This matting is used to protect the honeycomb centre and also as insulation to maintain the high temperatures needed for the reactions to take place within the catalyst. RCF has properties similar to asbestos as is classed as hazardous waste. In most cases it is not possible to determine if a catalytic converter has RCF matting before it is de-canned. The operator undertakes this operation under Schedule 1, Section 5.6 Part A1 (a) and Section S5.3 A1 (a) of the Environmental Permitting Regulations. The site also facilities the treatment and storage of non-hazardous automotive catalysts. Furthermore, the site also acts as a transfer station for chemical catalyst material destined for the sister site. No on-site activities are undertaken apart from the verification of external packaging condition and the appropriateness of labels. The annual throughput for all operations will not exceed 8000 tonnes.

RCF will be handled and stored in accordance the Environment Agency's quick guide 'Catalytic Converters containing Refractory Ceramic Fibre'. Ceramic automotive catalysts are made from the ceramic substrate (aluminium, zirconium and rare earth oxides) and platinum group metals (platinum, palladium and rhodium).

The canned material is sorted during the de-canning process to separate the incoming material into the two different types of catalytic converters (hazardous RCF containing type and the non-RCF containing). The metallic converters are prepared on site before being placed in waste skips for recycling off-site. The de-canned ceramic catalysts or any of this material that is delivered in a de-canned state, are size reduced in stages to a fine homogeneous powder at a rate of between 300-1000kg/hour using one of the milling units on site. The material is then bagged and stored in the warehouse area of the site whilst a sample is prepared for analysis by an off-site laboratory to determine the most appropriate onward process.

The plant is located entirely within a building. Air from around potentially dusty operations is extracted by Local Exhaust Ventilation (LEV) systems. Dust from this collected air is abated using single stage bag filters, one located at each end of the of the process lines. The outlet of each system is ducted and discharged externally from the building.

The sample preparation prepares blended materials into 100g bags for shipment to a BASF sister site in Rome which houses a laboratory where detailed analysis is conducted to determine the precious metal contents.

Equipment and plant within this area has extraction to remove waste heat and dust from the oven and processing benches, which is filtered using a bag filter being discharged to atmosphere.

There are sensitive receptors in relatively close proximity to the Installation. The closest receptors are industrial in nature, with the closest receptor immediately to the north of BASF, whilst the closest residential receptors are located to the south east, approximately 420m away.

6 Special Areas of Conservation (SAC) are located within 10km of the installation, with Wye Valley & Forest of Dean Bat Sites SAC the closest, approximately 2.2km from the Installation. There 2 Special Protection Areas (SPA) within 10km of the Installation, with the Severn Estuary SPA the closest, approximately 9.4km from the Installation. There are 2 Ramsar sites within 10km of the Installation, with the Severn Estuary Ramsar the closest, approximately 9.4km from the Installation. An Appendix 11 has been completed and sent to Natural England for information only. There will be no likely significant effect from this operation. Emissions to air (of particulates) are mitigated by filters and operating techniques employed by the Operator. There are no other emissions from the site i.e. to water or to sewer. All operations take place within a building and these operations are conducted using best available techniques and the applicable sector guidance notes for the storage and treatment of hazardous wastes are followed.

#### Key issues of the decision

# <u>The Process – Compliance in line with the Environment Agency's quick guide on catalytic converters containing refractory ceramic fibre (RCF)</u>

Catalytic converters are fitted to a vehicle exhaust system for the purpose of reducing the amount of volatile organic compounds (VOCs), carbon monoxide and nitrogen oxides emitted in the exhaust gas of the vehicle.

Catalytic converters have a ceramic monolith core with a honeycomb structure. The catalyst within the honeycomb is usually a mix of precious metals. Platinum is the mostly widely used, along with palladium and rhodium.

Catalytic converters, once removed from the vehicle, are "de-canned". Decanning is where the metal casing is cut open using a guillotine and the ceramic core is removed. The ceramic core is then milled into a homogenous powder that is sent for processing to recover the precious metals.

In some catalytic converters and diesel particulate filters there is a support mat made from refractory ceramic fibre (RCF). This matting is used to protect the honeycomb centre and also as insulation to maintain the high temperatures needed for the reactions that take place in the honeycomb centre.

RCF is classified as a Category 1B carcinogen and has properties very similar to asbestos, therefore catalytic converters containing RCF matting must be classed as hazardous waste. In most cases it is not possible to tell if a catalytic converter has RCF matting before it is de-canned. Therefore, practically all of the waste treated in this way is considered hazardous waste.

Our quick guide titled 'Catalytic converters containing refractory ceramic fibre (RCF)' lays out the requirements for the storage, handling, and treatment of catalytic converters with RCF matting. The operator has confirmed they will meet these requirements. In short, that involves the following:

#### Refractory Ceramic Fibre (RCF) matting only:

If RCF matting is removed from the catalytic converters at the site, it must adhere to the following: it will need to be double bagged in 400 gauge polyethylene, or in 400 gauge polyethylene lined sealable bags or wrapped in 400 gauge polyethylene plastic and sealed. The bags/sealed plastic must be stored in a secure place or lockable rigid container which is suitably labelled to identify that it contains RCF. The bags of RCF must not be re-opened or compacted and must be handled to ensure their integrity is maintained. The bagged RCF is hazardous waste and must be consigned to a suitably permitted facility (e.g. landfill for disposal) and coded as 16 01 21\* Bagged RCF matting from catalytic converters.

The Operator has confirmed that some RCF may be removed from the catalytic converters on site. BASF have confirmed that when RCF is removed it will be double bagged and stored in sealed drums until ready for collection. When it is dispatched, it will be coded as per the requirements of the quick guide and sent to landfill for disposal.

This approach is deemed acceptable.

#### Processing catalytic converters containing RCF:

Catalysts are required to be cut open and the catalyst removed under local extracted ventilation (LEV) and abated with a HEPA filter.

The Operator has confirmed they will follow the above requirements and that the HEPA filters on site are capable of capturing down to 2.5 microns.

#### Metal casing containing RCF:

Metal casing which has RCF matting remaining within it must be classed as hazardous waste and be consigned from the site for disposal. The metal casings must be either double bagged in 400 gauge polyethylene lined sealable bags, or, wrapped in 400 gauge polyethylene and then stored in a lockable rigid container. This waste must be sent to a suitably permitted landfill for disposal coded as 16 01 21\*.

Casing that does not have RCF present is segregated to be sent onwards for recycling.

The Operator has confirmed they will comply with the above requirements.

#### Internal storage of RCF prior to removal from the site

RCF is stored inside in drums, during the initial removal of the catalyst it is removed and placed into Asbestos grade bags, this is key as the Operator is required to account for the total weight of all received loads. Once the load has been finalised, these bags are then bagged again and returned to drums and placed into the racking on pallets. Once a suitable quantity has been accumulated, the drums are collected for disposal.

We have considered the operators proposals and any justification for departure from the guidance and accept that the methods used – as described above - are suitable.

#### **Emissions to Air**

The operator provided a H1 assessment with their application, which looked at emissions of particulate matter (as PM10) from a number of emission points. They had listed the following emission points into the H1 screening tool: 'Ball Mill 5 Mill & Bucket', 'Ball Mill 5 Feed Hopper', 'Ball Mill 2 Exhaust', 'Small Double Cone Blender' and 'autocat guillotine'. However, there were a number of errors in this submission (for example, incorrectly calculating the effective stack height), and we undertook a revised H1 assessment correcting the errors and using appropriate figures provided in the application. This data was present in the application and obtained through actual monitoring.

We were able to run a H1 assessment for the 'Ball Mill 5 Mill & Bucket', 'Ball Mill 5 Feed Hopper', 'Ball Mill 2 Exhaust', and the 'Dust Filter Exhaust (FA2)'.

There was not adequate information to carry out the H1 assessment for the 'Guillotine shears', 'Small Double Cone Blender', and 'Plasma Cutter Exhaust'. The exhaust gas system for the 'Double Cone Blender' and the 'Guillotine Shears' has not yet been installed, and therefore there were no

data present to be able to use in the H1 assessment. These three emission points have been captured in an improvement condition (IC1). The operator shall submit a written report to the Environment Agency for approval. The report shall contain the results of a monitoring exercise that measures the emissions of particulate matter to air and an assessment of the emissions using our H1 methodology.

During the determination it was also discovered that the 'Bradley Mill Feed Hopper Exhaust' is no longer operational. This has therefore not been considered in our assessment. Confirmation was also received that the 'Dust Filter Exhaust (FA2)' has also been decommissioned. Further information was provided of additional emission points that have been installed in recent months to improve the on-site process. These are labelled as 'Decanting Station', 'Large Double Cone Blender' and 'Ball Mill 5 Blender'. These additional 3 emission points have been added to the Improvement Programme outline above. This has resulted in a total of 6 emission points captured within Table S1.3 Improvement Programme Requirements.

A number of other point source emissions to air were identified, including 6 separate space heaters and a laboratory (sample preparation) ventilation exhaust. These have been excluded from our assessment and do not appear in 'Table 3.1 Point source emissions to air – emission limits and monitoring requirements' of the environmental permit, as they are not deemed to be process related, and therefore consideration of their impact is not required.

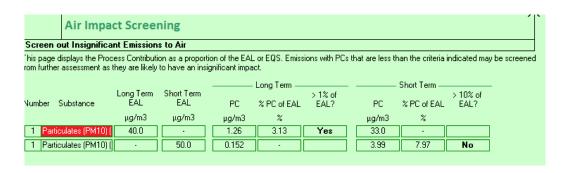
#### Screening results

As stated above, we ran a H1 assessment for the 'Ball Mill 5 Mill & Bucket', 'Ball Mill 5 Feed Hopper', 'Ball Mill 2 Exhaust', and the 'Dust Filter Exhaust (FA2)'.

Particulates (PM10) were examined using the H1 tool. The process contribution (PC) of particulates to air was calculated as a proportion of the Environmental Assessment Level (EAL).

The short term impacts screened out as insignificant. That is the short-term PC is less than 10% (the PC is 7.97% of the EAL) of the short-term environmental standard – see 'Air Impact Screening' information below.

However, the long-term PC is greater than 1% (the PC is 3.13% of the EAL) of the long-term environmental standard – See 'Air Impact Screening' information below.



As the long-term PC is greater than 1% of the long-term environmental standard, further assessment is required.

The second stage of the screening was to determine the impact of the PEC.

If you don't meet them you need to carry out a second stage of screening to determine the impact of the PEC.

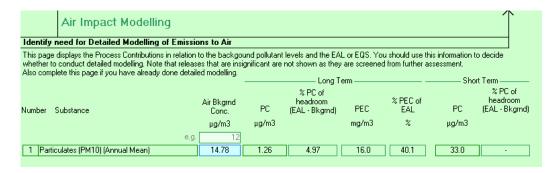
To calculate the long-term PECs of PCs to air, it was necessary to combine the following:

- Particulates (PM10s) PC to air
- The concentration of this substance that's already present in the environment – the 'background concentration'.

Further assessment of this substance not required where:

• The long-term PEC is less than 70% of the long-term environmental standards.

As the 'Air Impact Modelling' information below states, the long-term PEC is less than 70% of the long-term environmental standard. That is, the PEC is 40.1% of the EAL.



Both H1 assessments have assumed that the percentage of the year that the site is operating is 100%. However, this is highly unlikely to take place. During the submission provided by the Applicant, BASF quoted an operating mode (% of the year) of just 20% (based on operational hours/need, shift patterns, working week, etc). It can therefore be concluded that the long term PC result above is highly conservative in nature.

The emissions to air are well below the benchmark values set for particulate from point sources in SGN S5.06 and the Waste Treatment BREF.

We have not set emission limits within the permit. This has been determined from the results above and mitigation measures / operating techniques proposed by the operator.

### Fire prevention Plan (FPP)

We have not required a FPP for the site. FPPs are not required for hazardous wastes (compliance with SGN S5.06 is required instead), and the non-hazardous wastes present on site are not considered to pose a significant fire risk due to their nature.

#### Recovery and disposal codes used

A number of recovery (R) and disposal (D) codes were requested by the Applicant but during the determination it has become apparent that a number were not in fact required.

R8 (Recovery of components from catalysts) was requested but not inserted into the permit. The milling process that takes place on site isn't recovering the metal from the catalyst, but it is preparation to homogenise the honeycombe which contains the catalyst prior to it being submitted to the R8 process, which is the smelting – the smelting activity takes place elsewhere. R4 (Recycling/reclamation of metals and metal compounds) is the correct code to use. The decanning of the catalytic converters and any subsequent milling of the honeycombe core containing the catalyst is physico-chemical treatment (section 5.3A(1)(a)(ii)) and a R4 activity which produces 160801 (Spent catalysts containing gold, silver, rhenium, rhodium, palladium, iridium or platinum (except 16 08 07\*).

Furthermore, D9 (Physico-chemical treatment of hazardous wastes resulting in final compounds or mixtures which are discarded by any of the operations numbers D1 to D12), D13 (Blending or mixing prior to submission to any of the operations numbered D1 to D12), D14 (Repackaging prior to submission to any of the operations numbered D1 to D13) was requested but has not been inserted into the permit.

The wastes are being treated for the purpose of recovery. 'D' codes are required only of the operator is actually intending to dispose of the non-hazardous waste. We only need to include 'D' codes in permits where either treatment or storage for disposal is being intentionally carried out as a 'dedicated activity'. Therefore the storage of 'incidental' wastes (wastes unintentionally accepted as part of a load and quarantined), wastes that were accepted with the intention of recovery but that cannot be successfully recovered or residual wastes produced following a waste recovery activity on site, do not require 'D' codes to be included in the permit.

The above approach was agreed with the Operator and Area.

## Annex 1: decision checklist

This document should be read in conjunction with the application, supporting information and permit/notice.

| Aspect  | Justification / Detail   | Criteria   |
|---|--|------------|
| considered                                    |  | met<br>Yes |
| Receipt of sub                                | <br>mission  | res        |
| Confidential information                      | A claim for commercial or industrial confidentiality has not been made.  | <b>√</b>   |
| Identifying<br>confidential<br>information    | We have not identified information provided as part of the application that we consider to be confidential. The decision was taken in accordance with our guidance on commercial confidentiality.  | <b>√</b>   |
| Consultation                                  |  |            |
| Scope of consultation  Responses to           | The consultation requirements were identified and implemented. The decision was taken in accordance with our Public Participation Statement and our Working Together Agreements.  For this application we consulted the following bodies:  • Director of Public Health, Gloucestershire County Council  • Environmental Protection & Licensing, Forest of Dean District Council  • Health & Safety Executive  • Public Health England  The web publicising and consultation responses (Annex | ✓          |
| Responses to consultation and web publicising | The web publicising and consultation responses (Annex 2) were taken into account in the decision.  The decision was taken in accordance with our guidance.   | ·          |
|   |  |            |
| Operator                                      |  |            |
| Control of the facility                       | We are satisfied that the applicant (now the operator) is<br>the person who will have control over the operation of the<br>facility after the grant of the permit. The decision was<br>taken in accordance with our guidance on what a legal<br>operator is.   | <b>✓</b>   |
| European Direc                                | ctives   |            |
| Applicable directives                         | All applicable European directives have been considered in the determination of the application.   | <b>✓</b>   |

| Aspect  | Justification / Detail  | Criteria   |
|---|---|------------|
| considered  |   | met<br>Yes |
| The site  |   | 103        |
| Extent of the site of the facility                                    | The operator has provided plans which we consider are satisfactory, showing the extent of the site of the facility.  A plan is included in the permit and the operator is required to carry on the permitted activities within the site             | <b>✓</b>   |
|   | boundary.   |            |
| Site condition report   | The operator has provided a description of the condition of the site.   | <b>✓</b>   |
|   | We consider this description is satisfactory. The decision was taken in accordance with our guidance on site condition reports and baseline reporting under IED—guidance and templates (H5).  |            |
| Biodiversity,<br>Heritage,<br>Landscape<br>and Nature<br>Conservation | The application is within the relevant distance criteria of a site of heritage, landscape or nature conservation, and/or protected species or habitat.  | <b>√</b>   |
|   | A full assessment of the application and its potential to affect the [site(s)/species/habitat] has been carried out as part of the permitting process. We consider that the application will not affect the [features of the site/species/habitat]. |            |
|   | We have not formally consulted on the application (An Appendix 11 has been completed and sent to Natural England for information only). The decision was taken in accordance with our guidance.   |            |
| Environmental   | Risk Assessment and operating techniques  |            |
| Environmental risk  | We have reviewed the operator's assessment of the environmental risk from the facility.   | <b>✓</b>   |
|   | See Key Issues section of this document.  |            |
| Operating techniques  | We have reviewed the techniques used by the operator and compared these with the relevant guidance notes.   | <b>\</b>   |
|   | The Operator has stated that they will comply with the relevant TGN: SGN S5.06. That is, they will comply with  |            |

| nd storage of hazardous waste.  Inment Agency's quick guide titled staining refractory ceramic fibre rements for the storage, of catalytic converters with RCF as confirmed they will meet these oposed acceptable alternatives. his can be found in the Key Issues on in the application, we consider the page and divine other than | Yes   |
|---|---|
| nment Agency's quick guide titled taining refractory ceramic fibre rements for the storage, of catalytic converters with RCF is confirmed they will meet these oposed acceptable alternatives. its can be found in the Key Issues in the application, we consider   |   |
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|   |   |
|   | 1 ./  |
| npose conditions other than late, which was developed in y having regard to the relevant  | <b>V</b>  |
| ermitted waste types, es, which can be accepted at the as with respect to waste types in eposed by the Applicant and in the appropriate guidance: htaining Refractory Ceramic Fibre ency Quick guide.   | <b>\</b>  |
| on the application, we consider improvement conditions.  vement conditions to ensure that: in points are captured within an in the improvement contain the exercise that measures the   | <b>✓</b>  |
| matter to air and an assessment   | <b>√</b>  |
|   | matter to air and an assessment our H1 methodology.  the applicant must operate the th descriptions in the application, information received as part of the |

| Aspect                              | Justification / Detail  | Criteria   |
|-------------------------------------|---|------------|
| considered                          |   | met<br>Yes |
|                                     | Techniques table in the permit.   | 163        |
| Emission limits                     | We have decided that emission limits should be not set in the permit.   | <b>✓</b>   |
| Reporting                           | We have specified reporting in the permit. The parameter, for which reports shall be made, is for energy usage. This is a standard requirement.   | <b>*</b>   |
| Operator Comp                       | petence   |            |
| Environment<br>management<br>system | There is no known reason to consider that the operator will not have the management systems to enable it to comply with the permit conditions. The decision was taken in accordance with our guidance on what a competent operator is.  | <b>✓</b>   |
| Technical competence                | Technical competency is required for activities permitted. The operator is a member of an agreed scheme. The nominated person has been awarded an Environmental Permitting Operators Certificate (EPOC) from CIWM & WAMITAB (2 <sup>nd</sup> and 3 <sup>rd</sup> December 2015, certificate number 1555). | <b>✓</b>   |
|                                     | The named individual has 12 months from commencement of operations (or in this case, from date of permit issue) to secure the full qualification.   |            |
| Relevant convictions                | The Case Management System and National Enforcement Database have been checked to ensure that all relevant convictions have been declared.  | <b>√</b>   |
|                                     | No relevant convictions were found.   |            |
| Financial provision                 | There is no known reason to consider that the operator will not be financially able to comply with the permit conditions. The decision was taken in accordance with our guidance on what a competent operator is.   | <b>✓</b>   |

#### Annex 2: External Consultation and web publicising responses

Summary of responses to consultation and web publication and the way in which we have taken these into account in the determination process.

#### Response received from

Public Health England – 4 August 2016

#### Brief summary of issues raised

Our main concerns would relate to emissions to air, including dust.

#### Emissions to air

We note that an air quality screening assessment has been undertaken for nine out of a potential fifteen emissions release points. This screening assessment showed that short-term process contributions of nitrogen dioxide (NO2) and carbon monoxide (CO) were above levels of significance based on Environment Agency assessment criteria. We would expect that the remaining six release points are assessed once they have been installed, and that more detailed modelling is undertaken to confirm the expected lower process contribution to NO2 and CO concentrations. Operations at the proposed facility have the potential to release dust. We are reassured that the proposed plant is located entirely within a building, and air from around dusty operations is extracted locally and dust collected using bag filters. Fugitive emissions of dust are considered within management plans. We would recommend that the Regulator ensures that the proposed control measures, as described in the management plans, are sufficient to keep air emissions to a minimum.

It is assumed by Public Health England that the site will comply in all respects with the Environmental Permitting (England and Wales) Regulations 2010. Compliance with the legislation, together with good management, should ensure that site will present a low risk to local human receptors. Based on the application, this development does not present any obvious cause for concern.

#### Summary of actions taken or show how this has been covered

The NO2 and CO concentrations relate to figures generated from the space heaters. Within the application, a number of point source emissions to air were identified, including 6 separate space heaters and a laboratory (sample preparation) ventilation exhaust. These have been excluded from our assessment and do not appear in 'Table 3.1 Point source emissions to air – emission limits and monitoring requirements' of the environmental permit, as they are not deemed to be process related, and therefore consideration of their impact is not required. (Furthermore, space heaters, as well as the ventilation exhaust from the sample preparation room, are only used intermittently).

The Environment Agency has examined the release of particulates from various emission points, using H1 methodology - 4 points in total were examined: 'Ball Mill 5 Mill & Bucket', 'Ball Mill 5 Feed Hopper', 'Ball Mill 2 Exhaust', and the 'Dust Filter Exhaust (FA2)'. There was not adequate information to carry out the H1 assessment for the 'Guillotine shears', 'Double

Cone Blender', and 'Plasma Cutter Exhaust'. The exhaust gas system for the 'Double Cone Blender' and the 'Guillotine Shears' has not yet been installed, and therefore there were no data present to be able to use in the H1 assessment. These three emission points have been captured in an improvement condition. The operator shall submit a written report to the Environment Agency for approval. The report shall contain the results of a monitoring exercise that measures the emissions of particulate matter to air and an assessment of the emissions using our H1 methodology. There are therefore 7 point source emissions captured within Table S3.1 of the Environmental permit.

During the determination it was also discovered that the 'Bradley Mill Feed Hopper Exhaust' is no longer operational. This has therefore not been considered in our assessment. Confirmation was also received that the 'Dust Filter Exhaust (FA2)' has also been decommissioned. Further information was provided of additional emission points that have been installed in recent months to improve the on-site process. These are labelled as 'Decanting Station', 'Large Double Cone Blender' and 'Ball Mill 5 Blender'. These additional 3 emission points have been added to the Improvement Programme outline above. This has resulted in a total of 6 emission points captured within Table S1.3 Improvement Programme Requirements.

The Applicant has considered fugitive emissions of dust, and all operations take place within a building. We are satisfied that these measures will appropriately mitigate emissions to prevent a significant impact from the site.

Condition 3.2 of the environmental permit also deals with emissions of substances not controlled by emission limits. Under this condition, if notified by the Environment Agency that the activities are giving rise to pollution, the Operator must submit an emissions management plan which identifies and minimises the risks of pollution from emissions of substances not controlled by emission limits.

The Health and Safety Executive (HSE) / Forest of Dean District Council (Environmental Protection & Licensing) / Gloucestershire County Council (Director of Public Health) were also consulted, however, no consultation responses were received.

The application was also advertised on the <a href="www.gov.uk">www.gov.uk</a> website, with a deadline of 11/08/2016 for comments to be returned. No responses were received within the prescribed timescale.