

PERSISTENT ORGANIC POLLUTANTS

ASSESSMENT

HEGARTY METAL PROCESSORS (INTERNATIONAL) Ltd

BALLYSIMON ROAD

LIMERICK

WFP-LKC-11-001-01

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December 2011

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1. INTRODUCTION

The Hegarty Metal Processors (International) Limited (Hegarty Metals) Ballysimon Road facility operates under a Waste Permit (WFP-LKC-11-001-01) granted by Limerick County Council.

Condition 7.6 of the Permit requires an investigation to ensure any potential fugitive emissions of persistent organic pollutants to atmosphere are adequately controlled and minimised. The investigation shall have regard to S.I. No. 235 of 2010 and the Revised Draft Guidelines on Best Available Techniques (BAT) and Provisional Guidance on Best Environmental Practices relevant to Article 5 and Annex C of the Stockholm Convention on Persistent Organic Pollutants.

1.1 Regulatory Background

S.I. No. 253 gives statutory effect to EC Regulation No. 850/2004, as amended, on persistent organic pollutants (POPs). POPs are chemical substances that persist in the environment, bio accumulate through the food chain, and pose a risk of causing adverse effects to human health and the environment. They include pesticides (such as DDT), industrial chemicals (such as polychlorinated biphenyls and bromodiphenyls) and unintentional by-products of industrial processes (such as dioxins and furans).

EC Regulation 850/2004 prohibits the production, placing on the market and use of particular POPs, and restricts the production, placing on the market and use of other POPs. The aim of the Regulation is to ensure the coherent and effective implementation of the 2001 Stockholm Convention on POPs.

S.I. No 253 designates the Environmental Protection Agency (Agency) as the competent authority for the purposes of EC Regulation 850/2004. The Agency is obliged to draw up and maintain POPs release inventories and prepare national action and implementation plans to achieve the objectives of the Stockholm Convention.

Article 5 of the EC Regulation imposes conditions on the holders of any stockpiles of the POPs listed in Annex IV of the Regulation. The holder must manage the stockpile as waste and, in accordance with Article 7, put in place measures to avoid cross contamination and ensure that the substances are recovered /disposed of without undue delay.

The POPs listed in Annex IV of Regulation, a copy of which is in Appendix 1, include pesticides, polychlorinated biphenyls (PCB); Polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD/PCDF), and Bromodiphenyl ethers (BDE).

Annex C of the Stockholm Convention identifies the shredding of end-of-life vehicles (ELV) and certain types of waste electrical and electronic equipment as an activity with the potential to form and release unintentional POPs.

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2. POP EMISSIONS AND CONTROLS: BEST PRACTICE

2.1 Potential Sources of POPS

Section VI K of the Draft Guidelines on Best Available Techniques and Provisional Guidance on Best Environmental Practices relevant to Article 5 and Annex C of the Stockholm Convention on POPs (Draft BAT Guidance) discusses POP emissions from the shredding of ELVs and electrical equipment. A copy of Section VI K is in Appendix 2.

The Draft BAT Guidance states that, at present, there is insufficient evidence to conclude that the shredding of ELVs, household electrical equipment and other electrical equipment produces new PCDD/PCDF and PCBs. However, shredding has the potential to release unintentional POPS, comprising PCDD/PDCF and PCBs contained in oils, dielectric fluids and other materials in the vehicles or consumer goods, which are simply set free through the mechanical process.

In 2009, the European Commission conducted a study^a of a range of POPs, including polymers of BDE to provide guidance on the best options for their elimination or restriction. The study identified that two BDE polymers (C-PentaBDE and C-Octa BDE) were likely to be present in shredder residue.

C-PentaBDE is used in the manufacture of flexible polyurethane (PUR) foams, which are mainly used for the production of automotive and upholstery applications (e.g. automotive seating, head rests, sofas, mattresses etc). C-OctaBDE is used in the manufacture of acrylonitrilebutadiene-styrene (ABS) polymers, which were mainly used for housings/casings of electrical and electronic equipment, typically office equipment and business machines.

2.2 Best Practice

The Draft BAT Guidance (Appendix 2) recommends that it is best environmental practice to strengthen the responsibility of the operators of shredders to ensure that hazardous components and fluids in the incoming wastes, especially electrical devices, such as transformers and condensers, are identified and removed before the wastes are shredded.

The minimum technical requirement for treatment facilities that operate shredders is that they must be constructed to prevent the contamination of soil, water and air. This requires the provision of appropriate storage facilities, including impermeable surfaces with spillage

^a Interim Report: Study on Waste Related Issues of newly Listed POPs and candidate POPs; August 2010

collection for dismantled spare parts, including for oil-contaminated spare parts, appropriate containers for the storage of batteries, filters and PCB/PCT-containing condensers and appropriate storage tanks for other fluids.

The primary control measure to minimise the risk of POP emissions is the removal of fluids, like brake fluid, petrol, steering fluid, motor oil, coolants and transmission fluid from the ELV or other devices before shredding. This is especially applicable in the case of fluids containing PCBs, which should be identified and removed from any device to be shredded, with particular attention given to transformers and condensers.

The control measures should include:

The removal of batteries and liquefied gas tanks;

The removal or neutralization of potential explosive components, (e.g., air bags);

The removal and separate collection and storage of fuel, motor oil and oil from other components;

The removal of catalysts;

The removal of tyres and large plastic components (such as bumpers, dashboards, fluid containers, etc.), if these materials are not segregated in the shredding process in such a way that they can be effectively recycled as materials.

Although not referred to in the Draft BAT Guidance recommendations, it is considered best practice to minimise the risk of accidental fire in stockpiled shredded residues, which could result in the formation and release of POPs to atmosphere.

3. HEGARTY METALS OPERATIONS

3.1 Potential Sources of POP Emissions to Atmosphere

The facility accepts and processes metals ELVs and de-polluted transformers and switch gear under contracts with the ESB and others. The processing involves the initial manual separation of the metals into different types and the de-pollution of vehicles, followed by shredding, segregating and sizing. The shredder produces a ferrous metal stream consisting of small pieces of steel, a non ferrous metal stream comprising 95% aluminium 3% copper and 2% non metallic residuals and a shredder residue waste stream that contains non metallic materials (plastic, rubber, fabric, foam and wood).

The shredding process is similar to that described in the Draft BAT Guidance. Therefore, while the facility is not a source of new POPs (PCDD/PCDF and PCB), there is the potential for the release of unintentional POPS to atmosphere during the processing of the ELVs and electrical equipment.

The residue can include fragments of plastics containing BDE. However, the residue stockpiles are not a source of emissions of these substances to atmosphere. The Agency, in its role of preparing an inventory of POPs in the country, has included the Hegarty Metals facility in a nationwide study of BDE levels in shredder residues. The study involved the Agency collecting and analysing representative samples of the residue. It is expected that the results will be included in the final report to be published by the Agency.

3.2 Existing Control Measures

The Waste Permit specifies the manner in which the facility should be constructed and operated to prevent the contamination of soil, water and air. The Permit requires the provision of appropriate storage arrangement, including impermeable surfaces with drainage directed to oil interceptors, bunds and storage receptacles for all the materials and wastes accepted and handled at the facility.

The ELV de-pollution unit complies with the requirements of the Waste Management (End-of Life) Regulations 2006 in relation to the removal and storage of all fuel, oils and fluids. All liquids are removed from the vehicles and stored in integral sealed units pending consignment from the site. The de-pollution measures are documented in EHSP020 Procedure for the De-Pollution of End of Life Vehicles, which is in Appendix 3.

Electrical waste that could contain oils and dielectric fluids, for example transformers and condensers, are only accepted from producers that have measures in place to ensure all of the fluids are removed before delivery to the Hegarty Metals facility. A copy of the procedure that documents the cleaning of the electrical equipment is in Appendix 4.

Hegarty Metals has put in place measures to minimise the risk of accidental fires and to ensure a rapid and effective response if a fire does occur. These measures are described in the report on the Firewater Retention Risk Assessment, prepared and submitted to Limerick City Council in September 2010.

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4. CONCLUSIONS

Shredding of the ELV and certain types of WEEE is a potential source of the release to atmosphere of unintentional of POPS (PCDD/PCDF and PCB). The shredded residue may contain other POPs (BDE) but the stockpiled residue is not a source of emissions to the atmosphere.

The conditions in the Waste Permit regarding the site design and operation, which are intended to ensure that wastes are handled and stored in a way that minimises the risk to soil water and air, comply with the technical requirements of the Draft BAT Guidance.

The existing control measures for the removal of fluids that have the potential to contain POPs from the ELVs and WEEE before these are shredded, complies with the primary control measures' specified in the Draft BAT Guidance.

Hegarty Metals have put in place measures to minimise the risk of accidental fires at the facility, including the shredder residue stockpiles, and ensure a rapid and effective response to limit the duration of any fire.

OCM considers that the control measures already employed by Hegarty Metals comply with the best practice recommendations set out in the Draft BAT Guidance to control and minimise the emission of POPs to the atmosphere.

APPENDIX 1

Annex IV of EC Regulation 850/2004

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REGULATIONS

COMMISSION REGULATION (EU) No 756/2010

of 24 August 2010

amending Regulation (EC) No 850/2004 of the European Parliament and of the Council on persistent organic pollutants as regards Annexes IV and V

(Text with EEA relevance)

THE EUROPEAN COMMISSION,

2009 (hereinafter 'COP4') it was agreed to add all nine substances to the Annexes to the Convention.

Having regard to the Treaty on the Functioning of the European Union,

- (3) Annexes IV and V to Regulation (EC) No 850/2004 should be amended in order to take into account the new substances that have been listed during the COP4.

Having regard to Regulation (EC) No 850/2004 of the European Parliament and of the Council of 29 April 2004 on persistent organic pollutants and amending Directive 79/117/EEC⁽¹⁾, and in particular Article 7(4)(a), Article 7(5) and Article 14 thereof,

- (4) The COP4 decided to list chlordecone, hexabromo-biphenyl and hexachlorocyclohexanes, including lindane, in Annex A (elimination) to the Convention. Those substances are included in Annexes IV and V to Regulation (EC) No 850/2004 since they were listed by the Protocol.

Whereas:

- (1) Regulation (EC) No 850/2004 implements in the law of the Union the commitments set out in the Stockholm Convention on Persistent Organic Pollutants (hereinafter 'the Convention') approved by Council Decision 2006/507/EC of 14 October 2004 concerning the conclusion, on behalf of the European Community, of the Stockholm Convention on Persistent Organic Pollutants⁽²⁾ and in the Protocol to the 1979 Convention on Long-range Transboundary Air Pollution on Persistent Organic Pollutants (hereinafter 'the Protocol') approved by Council Decision 2004/259/EC of 19 February 2004 concerning the conclusion, on behalf of the European Community, of the Protocol to the 1979 Convention on Long-range Transboundary Air Pollution on Persistent Organic Pollutants⁽³⁾.

- (5) The COP4 decided to list pentachlorobenzene in Annex A (elimination) to the Convention. Therefore, pentachlorobenzene should be listed in Annexes IV and V to Regulation (EC) No 850/2004, indicating the corresponding maximum concentration limits, which have been set applying the methodology used for establishing the limit values for persistent organic pollutants (hereinafter 'POPs') in Council Regulation (EC) No 1195/2006 of 18 July 2006 amending Annex IV to Regulation (EC) No 850/2004 of the European Parliament and of the Council on persistent organic pollutants⁽⁴⁾ and in Council Regulation (EC) No 172/2007 of 16 February 2007 amending Annex V to Regulation (EC) No 850/2004 of the European Parliament and of the Council on persistent organic pollutants⁽⁵⁾. Those provisional maximum concentration limits should be reviewed in view of the results of a study on the implementation of the waste-related provisions of Regulation (EC) No 850/2004, to be conducted on behalf of the Commission.

- (2) Following nominations of substances received from the European Union and its Member States, Norway and Mexico, the Persistent Organic Pollutants Review Committee established under the Convention has concluded its work on the nine proposed substances, which have been found to meet the criteria of the Convention. At the fourth meeting of the Conference of the Parties to the Convention from 4 to 8 May

- (6) The COP4 decided to list Perfluorooctane sulfonic acid and its derivatives (hereinafter 'PFOS') in Annex B (restriction) to the Convention, with some exemptions for specific applications. The use of PFOS is currently allowed for some specific applications. Because of the lifespan of articles containing PFOS, these

⁽¹⁾ OJ L 158, 30.4.2004, p. 7.

⁽²⁾ OJ L 209, 31.7.2006, p. 1.

⁽³⁾ OJ L 81, 19.3.2004, p. 35.

⁽⁴⁾ OJ L 217, 8.8.2006, p. 1.

⁽⁵⁾ OJ L 55, 23.2.2007, p. 1.

articles will continue to enter the waste stream for some years, although in decreasing volumes. There may be practical difficulties of identifying certain materials containing PFOS within a given waste stream. Data on quantities and concentrations of PFOS in articles and wastes is currently still not sufficient. Extending the obligation in Regulation (EC) No 850/2004 to destroy or irreversibly transform the POP content to PFOS for waste exceeding the concentration limits of Annex IV could have impacts on existing recycling schemes, which may challenge another environmental priority of ensuring the sustainable use of resources. In view of this, PFOS is listed in Annexes IV and V without an indication of the concentration limits.

- (7) The COP4 decided to list tetrabromodiphenyl ether, pentabromodiphenyl ether, hexabromodiphenyl ether and heptabromodiphenyl ether, hereinafter 'polybrominated diphenyl ethers', in Annex A (elimination) to the Convention. Placing on the market and use of pentabromodiphenyl ether and octabromodiphenyl ether have been restricted in the Union by virtue of Annex XVII to Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency⁽¹⁾, with a maximum concentration limit of 0,1 % by weight. Pentabromodiphenyl ether, hexabromodiphenyl ether, heptabromodiphenyl ether and tetrabromodiphenyl ether are not currently being placed on the market in the Union as they are restricted by Commission Regulation (EC) No 552/2009 of 22 June 2009 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) as regards Annex XVII⁽²⁾ and Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment⁽³⁾. However, because of the lifespan of products containing those polybrominated diphenyl ethers, end-of-life products containing these substances will continue to enter the waste stream for some years. Taking into account the practical difficulties of identifying materials containing polybrominated diphenyl ethers within a mixed waste fraction and the current lack of comprehensive scientific data on quantities and concentrations of polybrominated diphenyl ethers in articles and wastes, extending the obligation to destroy or irreversibly transform the POP content to these new substances for waste exceeding the concentration limits of Annex IV could endanger existing recycling schemes and thus hinder the sustainable use of resources. This problem was acknowledged by the COP4 and special exemptions were agreed for continued recycling of wastes that contain listed polybrominated diphenyl ethers even if

this may lead to recycling of the POPs. Therefore, those exceptions should be reflected in Regulation (EC) No 850/2004.

- (8) Uniform maximum concentration limits are required in the Union in order to avoid a distortion of the internal market. Provisional maximum concentration limits have been set for pentachlorobenzene in Annexes IV and V to Regulation (EC) No 850/2004 based on available data and under application of the precautionary principle.
- (9) In view of the lack of comprehensive scientific information on quantities and concentrations in articles and wastes, as well as exposure scenarios, at this stage, no maximum concentration limits can be established for PFOS and polybrominated diphenyl ethers in Annexes IV and V to Regulation (EC) No 850/2004. Subject to further information becoming available and a review by the Commission, maximum concentration limits for the nine POPs will be proposed, taking into account the objectives of the POP Regulation.
- (10) In accordance with Article 22 of the Convention, the amendments to Annexes A, B and C thereto enter into force one year from the date of communication by the depositary of an amendment, which will fall on 26 August 2010. Consequently and for reasons of coherence, this Regulation should apply from the same date.
- (11) The measures provided for in this Regulation are in accordance with the opinion of the Committee established by Council Directive 75/442/EEC⁽⁴⁾. This Regulation should enter into force as a matter of urgency,

HAS ADOPTED THIS REGULATION:

Article 1

- Annex IV to Regulation (EC) No 850/2004 is replaced by Annex I to this Regulation.
- Annex V to Regulation (EC) No 850/2004 is amended in accordance with Annex II to this Regulation.

⁽¹⁾ OJ L 396, 30.12.2006, p. 1.

⁽²⁾ OJ L 164, 26.6.2009, p. 7.

⁽³⁾ OJ L 37, 13.2.2003, p. 19.

⁽⁴⁾ OJ L 194, 25.7.1975, p. 39.

Article 2

This Regulation shall enter into force on the day of its publication in the *Official Journal of the European Union*.

It shall apply from 26 August 2010.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels, 24 August 2010.

For the Commission
The President
José Manuel BARROSO

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ANNEX I

ANNEX IV

List of substances subject to waste management provisions set out in Article 7

Substance	CAS No	EC No	Concentration limit referred to in Article 7(4)(a)
Tetrabromodiphenyl ether C ₁₂ H ₆ Br ₄ O			
Pentabromodiphenyl ether C ₁₂ H ₅ Br ₅ O			
Hexabromodiphenyl ether C ₁₂ H ₄ Br ₆ O			
Heptabromodiphenyl ether C ₁₂ H ₃ Br ₇ O			
Perfluorooctane sulfonic acid and its derivatives (PFOS) C ₈ F ₁₇ SO ₂ X (X = OH, Metal salt (O-M ⁺), halide, amide, and other derivatives including polymers)			
Polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD/PCDF)			15 µg/kg ⁽¹⁾
DDT (1,1,1-trichloro-2,2-bis (4-chlorophenyl)ethane)	50-29-3	200-024-3	50 mg/kg
Chlordane	57-74-9	200-349-0	50 mg/kg
Hexachlorocyclohexanes, including lindane	58-89-9 319-84-6 319-85-7 608-73-1	210-168-9 200-401-2 206-270-8 206-271-3	50 mg/kg
Dieldrin	60-57-1	200-484-5	50 mg/kg
Endrin	72-20-8	200-775-7	50 mg/kg
Heptachlor	76-44-8	200-962-3	50 mg/kg
Hexachlorobenzene	118-74-1	200-273-9	50 mg/kg
Chlordecone	143-50-0	205-601-3	50 mg/kg
Aldrin	309-00-2	206-215-8	50 mg/kg
Pentachlorobenzene	608-93-5	210-172-5	50 mg/kg
Polychlorinated Biphenyls (PCB)	1336-36-3 and others	215-648-1	50 mg/kg ⁽²⁾
Mirex	2385-85-5	219-196-6	50 mg/kg
Toxaphene	8001-35-2	232-283-3	50 mg/kg

Substance	CAS No	EC No	Concentration limit referred to in Article 7(4)(a)
Hexabromobiphenyl	36355-01-8	252-994-2	50 mg/kg

(¹) The limit is calculated as PCDD and PCDF according to the following toxic equivalency factors (TEFs):

PCDD	TEF
2,3,7,8-TeCDD	1
1,2,3,7,8-PeCDD	1
1,2,3,4,7,8-HxCDD	0,1
1,2,3,6,7,8-HxCDD	0,1
1,2,3,7,8,9-HxCDD	0,1
1,2,3,4,6,7,8-HpCDD	0,01
OCDD	0,0003
PCDF	TEF
2,3,7,8-TeCDF	0,1
1,2,3,7,8-PeCDF	0,03
2,3,4,7,8-PeCDF	0,3
1,2,3,4,7,8-HxCDF	0,1
PCDD	TEF
1,2,3,6,7,8-HxCDF	0,1
1,2,3,7,8,9-HxCDF	0,1
2,3,4,6,7,8-HxCDF	0,1
1,2,3,4,6,7,8-HpCDF	0,01
1,2,3,4,7,8,9-HpCDF	0,01
OCDF	0,0003

(²) Where applicable, the calculation method laid down in European standards EN 12766-1 and EN 12766-2 shall be applied.

ANNEX II

In Annex V, Part 2, to Regulation (EC) No 850/2004 the table is replaced by the following:

'Wastes as classified in Commission Decision 2000/532/EC		Maximum concentration limits of substances listed in Annex IV (1)	Operation
10	WASTES FROM THERMAL PROCESSES	Aldrin: 5 000 mg/kg; Chlordane: 5 000 mg/kg;	Permanent storage shall be allowed only when all the following conditions are met: 1. the storage takes place in one of the following locations: — safe, deep, underground, hard rock formations, — salt mines, — a landfill site for hazardous waste, provided that the waste is solidified or partly stabilised where technically feasible as required for classification of the waste in Subchapter 1903 of Decision 2000/532/EC; 2. the provisions of Council Directive 1999/31/EC (3) and Council Decision 2003/33/EC (4) were respected; 3. it has been demonstrated that the selected operation is environmentally preferable.
10 01	Wastes from power stations and other combustion plants (except 19)	Chlordecone: 5 000 mg/kg; DDT (1,1,1-trichloro-2,2-bis (4-chlorophenyl) ethane): 5 000 mg/kg;	
10 01 14 * (2)	Bottom ash, slag and boiler dust from co-incineration containing dangerous substances	Dieldrin: 5 000 mg/kg; Endrin: 5 000 mg/kg; Heptabromodiphenyl ether (C ₁₂ H ₃ Br ₇ O); Heptachlor: 5 000 mg/kg;	
10 01 16 *	Fly ash from co-incineration containing dangerous substances	Hexabromobiphenyl: 5 000 mg/kg; Hexabromodiphenyl ether (C ₁₂ H ₄ Br ₆ O); Hexachlorobenzene: 5 000 mg/kg;	
10 02	Wastes from the iron and steel industry	Hexachlorocyclohexanes, including lindane: 5 000 mg/kg;	
10 02 07 *	Solid wastes from gas treatment containing dangerous substances	Mirex: 5 000 mg/kg; Pentabromodiphenyl ether (C ₁₂ H ₅ Br ₅ O); Pentachlorobenzene: 5 000 mg/kg;	
10 03	Wastes from aluminium thermal metallurgy	Perfluorooctane sulfonic acid and its derivatives (PFOS) (C ₈ F ₁₇ SO ₂ X)	
10 03 04 *	Primary production slag	R = OH, Metal salt (O-M ⁺), halide, amide, and other derivatives including polymers);	
10 03 08 *	Salt slag from secondary production	Polychlorinated Biphenyls (PCB) (5): 50 mg/kg;	
10 03 09 *	Black dross from secondary production	Polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD/PCDF) (6): 5 mg/kg; Tetrabromodiphenyl ether (C ₁₂ H ₆ Br ₄ O); Toxaphene: 5 000 mg/kg;	
10 03 19 *	Flue-gas dust containing dangerous substances		
10 03 21 *	Other particulates and dust (including ball mill dust) containing dangerous substances		
10 03 29 *	Wastes from treatment of salt slag and black dross containing dangerous substances		
10 04	Wastes from lead thermal metallurgy		
10 04 01 *	Slag from primary and secondary production		

Wastes as classified in Commission Decision 2000/532/EC		Maximum concentration limits of substances listed in Annex IV (1)	Operation
10 04 02 *	Dross and skimming from primary and secondary production		
10 04 04 *	Flue-gas dust		
10 04 05 *	Other particulates and dust		
10 04 06 *	Solid wastes from gas treatment		
10 05	Wastes from zinc thermal metallurgy		
10 05 03 *	Flue-gas dust		
10 05 05 *	Solid waste from gas treatment		
10 06	Wastes from copper thermal metallurgy		
10 06 03 *	Flue-gas dust		
10 06 06 *	Solid wastes from gas treatment		
10 08	Wastes from other non-ferrous thermal metallurgy		
10 08 08 *	Salt slag from primary and secondary production		
10 08 15 *	Flue-gas dust containing dangerous substances		
10 09	Wastes from casting of ferrous pieces		
10 09 09 *	Flue-gas dust containing dangerous substances		
16	WASTES NOT OTHERWISE SPECIFIED IN THE LIST		
16 11	Waste linings and refractories		
16 11 01 *	Carbon-based linings and refractories from metallurgical processes containing dangerous substances		
16 11 03 *	Other linings and refractories from metallurgical processes containing dangerous substances		

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Wastes as classified in Commission Decision 2000/532/EC		Maximum concentration limits of substances listed in Annex IV (1)	Operation
17	CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)		
17 01	Concrete, bricks, tiles and ceramics		
17 01 06 *	Mixtures of, or separate fractions of concrete, bricks, tiles and ceramics containing dangerous substances		
17 05	Soil including excavated soil from contaminated sites, stones and dredging spoil		
17 05 03 *	Inorganic fraction of soil and stones containing dangerous substances		
17 09	Other construction and demolition wastes		
17 09 02 *	Construction and demolition wastes containing PCB, excluding PCB containing equipment		
17 09 03 *	Other construction and demolition wastes containing dangerous substances		
19	WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION AND WATER FROM INDUSTRIAL USE		
19 01	Wastes from incineration or pyrolysis of waste		
19 01 07 *	Solid wastes from gas treatment		
19 01 11 *	Bottom ash and slag containing dangerous substances		
19 01 13 *	Fly ash containing dangerous substances		
19 01 15 *	Boiler dust containing dangerous substances		

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Wastes as classified in Commission Decision 2000/532/EC		Maximum concentration limits of substances listed in Annex IV (1)	Operation
19 04	Vitrified waste and waste from vitrification		
19 04 02 *	Fly ash and other flue-gas treatment wastes		
19 04 03 *	Non-vitrified solid phase		

(1) These limits apply exclusively to a landfill site for hazardous waste and do not apply to permanent underground storage facilities for hazardous wastes, including salt mines.

(2) Any waste marked with an asterisk * is considered as hazardous waste pursuant to Directive 91/689/EEC and subject to the provisions of that Directive.

(3) OJ L 182, 16.7.1999, p. 1.

(4) OJ L 11, 16.1.2003, p. 27.

(5) The calculation method laid down in European standards EN 12766-1 and EN 12766-2 shall apply.

(6) The limit is calculated as PCDD and PCDF according to the following toxic equivalency factors (TEFs):

PCDD	TEF
2,3,7,8-TeCDD	1
1,2,3,7,8-PeCDD	1
1,2,3,4,7,8-HxCDD	0,1
1,2,3,6,7,8-HxCDD	0,1
1,2,3,7,8,9-HxCDD	0,1
1,2,3,4,6,7,8-HpCDD	0,01
OCDD	0,0003
PCDF	TEF
2,3,7,8-TeCDF	0,1
1,2,3,7,8-PeCDF	0,03
2,3,4,7,8-PeCDF	0,3
1,2,3,4,7,8-HxCDF	0,1
1,2,3,6,7,8-HxCDF	0,1
1,2,3,7,8,9-HxCDF	0,1
PCDD	TEF
2,3,4,6,7,8-HxCDF	0,1
1,2,3,4,6,7,8-HpCDF	0,01
1,2,3,4,7,8,9-HpCDF	0,01
OCDF	0,0003'

APPENDIX 2

Draft Guidance on Best Environmental Practice

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Section VI

Guidance/guidelines by source category: Source categories in Part III of Annex C

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**Part III Source category (k):
Shredder plants for the treatment of end-of-life
vehicles**

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VI.K Shredder plants for the treatment of end-of-life vehicles

Summary

Shredder plants for treatment of end-of-life vehicles are listed in Annex C of the Stockholm Convention as a source that has the potential to form and release chemicals listed in Annex C. Shredders are large-scale machines equipped inside with one or more anvils or breaker bars and lined with alloy steel wear plates. An electric motor drives the rotor with the free-swinging alloy steel hammers. Beneath the shredder is a vibratory pan, which receives the shredded material discharged through the grates. Typically a ferrous metal stream is produced, which is relatively clean and consists of small (50 mm) pieces of steel and a “fluff” stream, which contains the fragments of non-ferrous metals and other materials that entered the shredder (also known as fragmentizer).

Very few data of stack emission measurements at shredder plants are available. However, the results of some studies have shown levels of dioxin compounds greater than 0.1 ng I-TEQ/m³. At present there is not sufficient evidence that in the (mechanical) shredding of vehicles, household electrical equipment or other electrical appliances new formation occurs of polychlorinated dibenzo-*p*-dioxins (PCDD), polychlorinated dibenzofurans (PCDF) or polychlorinated biphenyls (PCB). The data available indicate that the PCDD/PCDF and PCB released from shredder plants are from industrial, intentional production and have been introduced with oils, dielectric fluids, and other materials contained in these vehicles or consumer goods and which are simply set free through this mechanical process.

In any case, measures to prevent accidental fires (which could result in the formation of chemicals listed in Annex C) should be in place at shredder plants. Shredder light fluff consists of flammable plastic films and fibrous dust, which forces a careful plant operation for the prevention of accidental fire. Systems for dust suppression (e.g. wet shredding) or dust collection (e.g. cyclones, venturi scrubbers or baghouse) are normally installed on shredder plants for the treatment of end-of-life vehicles. Dust suppression or collection systems would help to reduce potential emission of persistent organic pollutants. To improve emission control of the dust, fine dry residues should be stored in such a way that dispersion is minimized. Other sources of dioxin precursors that may result in the formation of PCDD/PCDF when burnt include PCB-containing condensers, PCB- or chlorobenzene-contaminated waste oils or textiles, and polymers containing brominated flame retardants (formation of polybrominated dibenzo-*p*-dioxins (PBDD) and polybrominated dibenzofurans (PBDF) as contaminants).

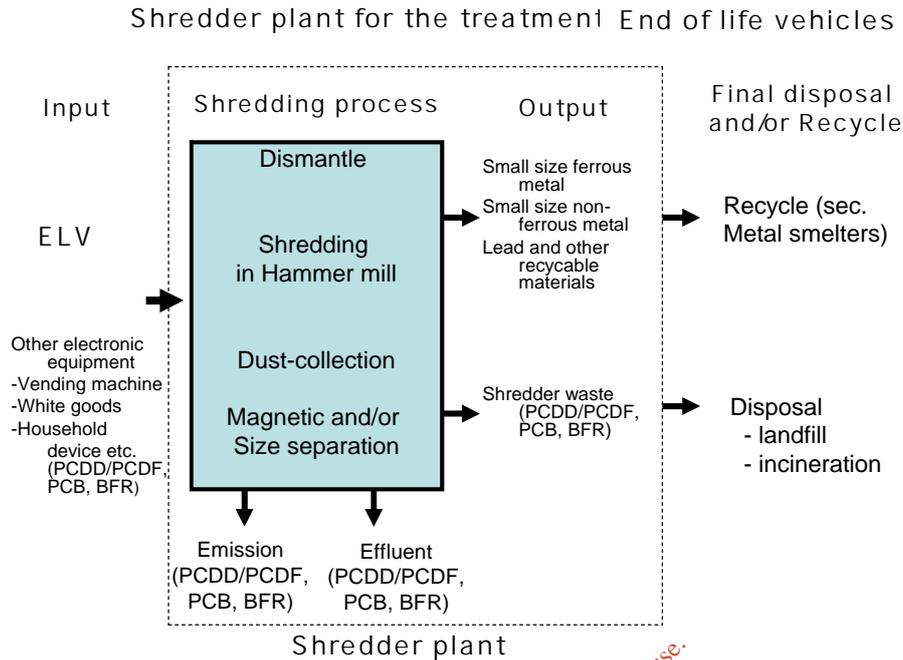
Preamble

Shredder plants for the treatment of end-of-life vehicles are listed in Annex C of the Convention as a source that has the potential to form and release unintentional persistent organic pollutants. At present, however, there is insufficient evidence that, in this mechanical process, dibenzo-*p*-dioxins and dibenzofurans or polychlorinated biphenyls are newly formed. The data available indicate that the dibenzo-*p*-dioxins and dibenzofurans and polychlorinated biphenyls released from shredder plants are from industrial/intentional polychlorinated biphenyl production and have been introduced with the oils and dielectric fluids, etc., contained in the vehicles or more probably in consumer goods. The shredders simply free these contaminants.

1. Process description

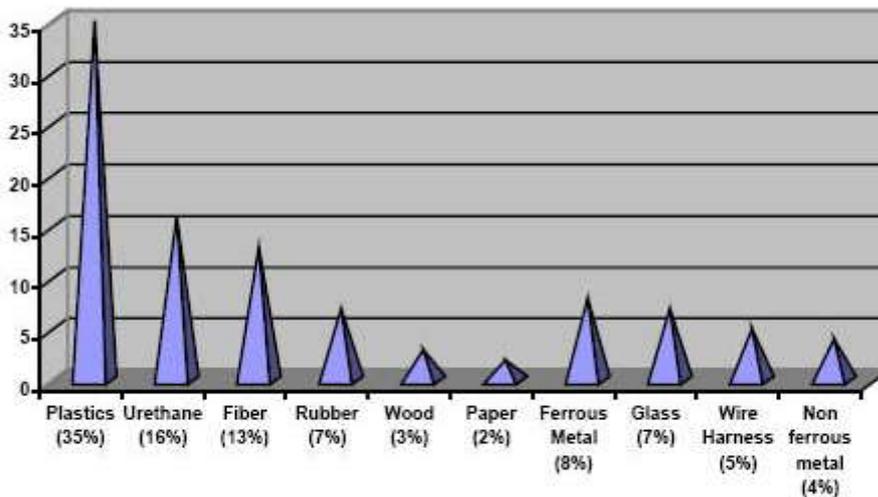
End-of-life-vehicles are processed through shredders. The practice is to shred them along with other end-of-life metal products (such as bicycles, office furniture, vending machines and so-called white goods, such as household devices). In the plant, a high-performance-hammer mill produces sized pieces of ferrous scrap of a high physical and chemical purity. The ferrous scrap is sought after by steel makers and other secondary metal producers. An overview of the process is shown in figure 1.

Figure 1 Overview of the shredder process



Many components of vehicles and other electrical devices are made of non-ferrous materials, such as copper, aluminum and zinc. In the shredding process, magnetic separation is used to remove the magnetic ferrous fraction from other materials. The non-ferrous metals, such as copper and aluminum, are normally sorted out at a later stage. The remainder is the so-called shredder waste and is estimated at between 25% and 35% of the weight of end-of-life vehicles (Environment Australia, Department of the Environment and Heritage, 2002). Shredder waste consists of glass, fibre, rubber, automobile liquids, plastics and dirt. Figure 2 illustrates the composition of shredder waste.

Figure 2 Composition of shredder waste



Source: Environment Australia, Department of the Environment and Heritage (2002)

3. Composition of shredder waste

The composition of shredder fluff will vary considerably from batch to batch and shredder to shredder – due to the different mixes of raw materials being processed and the differing levels of pre-processing and inspection by shredder operators. It should be noted that shredder fluff is likely to vary significantly between shredders due to varying requirements under state and territory licensing conditions and the changes in those conditions over time.

An investigation from Sweden (Börjeson, L.; Löfvenius, G.; Hjelt, M.; Johansson, S.; Marklund, S., 2000) shows that levels of PCDD/PCDF per gram in dry samples of shredder fluff are low in all the fractions (table 1). This conforms to expectations that levels of dioxins and furans should generally be very low, because dibenzo-*p*-dioxins and dibenzofurans is neither used nor deliberately produced for any technical product or substance.

Unlike the dibenzo-*p*-dioxins and dibenzofurans levels, however, the levels of polychlorinated biphenyls were high, especially in fractions originating from industrial waste or waste white goods. The presence of polychlorinated biphenyls in white goods contributes most heavily to polychlorinated biphenyls in the shredder process, but is not a result of unintentional formation during the shredder process. Therefore, it is desirable to know and identify before the shredder process which components of an electrical device may include these compounds and to try to dismantle them before shredding.

Table 1 Organics in shredder residues defined in the original reference as “fuel fractions” and “disposal fractions”

Organics	PCDD/PCDF	PCDD/PCDF	PCB	PCB	PCBz	PCBz
	I-TEQ ng g ⁻¹	I-TEQ ng g ⁻¹	ug g ⁻¹	ug g ⁻¹	ug g ⁻¹	ug g ⁻¹
	Fuel fr	Disposal fr	Fuel fr	Disposal fr	Fuel fr	Disposal fr
P1 half dism.	< 0.6	-	6.1	-	2.2	-
P1 full dism.	< 0.20	-	6.1	-	0.4	-
P1 mixed cars	< 0.03	0.04	1.1	41	0.7	0.4
P1 mixed waste	< 0.2	0.03	12	77	0.8	0.3
P1 white goods	< 0.15	0.04	34	114	0.9	0.4
P1 industrial waste	< 0.3	0.04	24	62	0.3	0.2
P2 half dism.	< 0.2	-	2.1	-	1.9	-
P2 half dism.	< 0.11	-	0.5	-	1.5	-
P2 full dism.	< 0.6	-	0.6	-	0.4	-
P2 mixed cars	< 0.3	0.06	1.5	14	1.5	0.3
P2 mixed waste	< 0.2	0.15	39	217	1.9	0.4
P2 white goods	< 0.16	0.11	102	254	0.7	0.5
P2 industrial waste	< 0.12	0.14	25	295	0.4	0.15

Source. Börjeson, L; Löfvenius, G; Hjelt, M.; Johansson, S.; Marklund, S. 2000

Studies have confirmed that automotive shredder residues derived from end-of-life vehicles contain PCB in the ppm-range (=mg/kg) (Urano *et al.* 1999, Sakai *et al.* 1998, 2000). dibenzo-*p*-dioxins and dibenzofurans contamination in engine oil from end-of-life vehicles could not be detected. Taking congener profiles into account, it can be considered that the major reason for this is that polychlorinated biphenyls -containing materials manufactured in the past were mixed in the recycling and waste processes. While emissions of persistent organic pollutants from shredding plants were not examined in these studies, given the levels of PCB in the ppm-range (=mg/kg) in automotive shredder residues, potential emissions of persistent organic pollutants through flue gas should be considered. This polychlorinated biphenyl release originates from the commercial polychlorinated biphenyl mixture that is used in automobiles. These PCBs are not unintentionally generated persistent organic pollutants and thus, in a strict sense, not subject to the polychlorinated biphenyl release inventory

under the provisions of Article 5 of the Stockholm Convention. Since there is no way, however, to differentiate between intentional and unintentional polychlorinated biphenyls in shredder wastes and emissions, best available techniques and best environmental practices should be applied to minimize or eliminate release of any polychlorinated biphenyls from the shredder process.

Copper and chlorine in significant amounts are constituents of shredder waste and promote in case of burning the formation of dibenzo-*p*-dioxins and dibenzofurans and other unintentionally released persistent organic pollutants.

4. Emission concentrations from shredder plants

A report on a European dioxin inventory stated that measured dibenzo-*p*-dioxins and dibenzofurans data exist for a few shredder installations. Generally, very low concentrations (< 0.01 ng I-TEQ/m³) were found in a plant investigated in Sachsen-Anhalt (Germany). The available data are summarized in table 2 below, showing emissions and emission factors to air.

Table 2 Dibenzo-*p*-dioxins and dibenzofurans emissions in German shredder plants

	Minimum	Maximum	Geometric mean	Arithmetic mean
Emission concentration (ng I-TEQ/m ³)	0.002	0.430	0.056	0.140
Emission factor (µg I-TEQ/t)	0.059	0.667	0.236	0.303

Source: LUA 1997.

A further investigation from Belgium (François, F., Blondeel, M., Bernaert, P., Baert, R., 2004) considered potential specific sources of unintentionally released PCB and PCDD/PCDF from a shredder plant turning end-of-life vehicles and waste from electronic and electrical equipment into various reusable fractions. An overview of a number of stack emission measurements of dibenzo-*p*-dioxins and dibenzofurans and unintentionally released polychlorinated biphenyls is given in table 3. The shredders are equipped with at least a cyclone filter system for de-dusting the flue gases. Flue gas flow rates are typically about 75,000 Nm³/h. All dibenzo-*p*-dioxins and dibenzofurans concentrations, except one, were below 0.1 ng TEQ/Nm³.

Table 3 Measured data for emission concentrations from shredder plants

Emission measurements	PCDD/PCDF ng TEQ/Nm ³	dioxin-like PCB (sum of 12) ng TEQ/Nm ³
shredder 1	0.0098	0.048
	0.012	0.41
	0.0048	0.073
	0.0004	0.025
shredder 2	0.077	0.74
	0.043	1.06
	0.022	0.30
shredder 3	0.0088	0.171
	0.37	0.34
	0.025	0.73

Source: François, F., Blondeel, M., Bernaert, P., Baert, R. 2004

Dioxin precursors which may result in the formation of polychlorinated dibenzo-*p*-dioxins and dibenzofurans (PCDD/PCDF) when burnt include polychlorinated biphenyls -containing condensers, polychlorinated biphenyls or chlorobenzene contaminated waste oils or textiles, and polymers containing brominated flame retardants (formation of polybrominated dibenzo-*p*-dioxins (PBDD) and polybrominated dibenzofurans (PBDF) as contaminants).

5. Recommended measures

An important best environmental practice is to strengthen the responsibility of the operators of shredders. An analysis should be undertaken to identify hazardous components and fluids with incoming material and to provide facilities to remove them before the shredder process.

It is crucial to control treated scrap, especially electric devices, transformers and condensers, which must be identified, dismantled and eliminated separately to avoid the introduction of polychlorinated biphenyls into the plant. This is also a measure to reduce the contamination of shredder residues by polychlorinated biphenyls.

Nevertheless, shredder residues are always contaminated and must only be disposed of in an incineration dedicated plant.

By dismantling and recycling big plastic parts, for instance bumpers, a considerable reduction of the remaining plastic fraction in the end-of-life vehicles and in the resulting shredder waste can be achieved.

By further treatment of shredder wastes, for instance by eddy current separation, a considerable proportion of the metals contained in the waste, such as copper and aluminium, can be recovered.

In order to achieve a higher proportion of recyclable fractions, the use of recyclable material and simple disassemblies should be encouraged in the stage of product design. This is not only valid for end-of-life vehicles.

6. Minimum technical requirements for treatment

Sites have to be constructed to prevent the contamination of soil, water and air. For this reason, appropriate storage facilities, including impermeable surfaces with spillage collection facilities; decanters and cleanser-degreasers should be provided, as well as equipment for the treatment of appropriate storage tanks for water, including rainwater. In addition, appropriate storage for dismantled spare parts, including impermeable storage for oil-contaminated spare parts, appropriate containers for the storage of batteries (with electrolyte neutralization on site or elsewhere), filters and PCB/PCT-containing condensers and appropriate storage tanks for fluids are necessary.

7. Primary measures

Fluids, like brake fluid, petrol, steering fluid, motor oil, coolants and transmission fluid should generally be removed from the end-of-life vehicle or other devices before shredding. This is especially applicable in the case of PCBs, which should be identified and removed from any device to be shredded. Specific attention should be given to transformers and condensers. Measures should include:

- The removal of batteries and liquified gas tanks;
- The removal or neutralization of potential explosive components, (e.g., air bags);
- The removal and separate collection and storage of fuel, motor oil and oil from other components;
- The removal of catalysts;
- The removal of tyres and large plastic components (such as bumpers, dashboards, fluid containers, etc.), if these materials are not segregated in the shredding process in such a way that they can be effectively recycled as materials.

8. Secondary Measures

Measures to prevent releases of persistent or ganic pollutants at shredder plants include:

- The advanced treatment of flue gas (with bag filters and activated carbon filters to remove both gaseous and particle emissions);

- The proper disposal of residuals and liquid shredder wastes containing a mixture of organic materials, heavy metals such as copper and, in many cases, polychlorinated biphenyls and other chlorinated substances. Treating this waste in an inappropriate manner will lead to emissions of unintentionally released persistent organic pollutants. This is especially the case in open burning. Shredder wastes should be never burned in an open fire or in inappropriate facilities;
- The appropriate treatment of shredder waste is incineration in a facility meeting the requirements for best available techniques and best environmental practices. If such a facility is not available, disposal in a sanitary landfill may be preferred to other forms of disposal.

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APPENDIX 3

Hegarty Metals ELV De-pollution Procedure

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EHSP020 Procedure for the Acceptance and De-Pollution of End-of-Life-Vehicles

ELV Acceptance

Stage	Procedure	Timeline	Notes
1	ELV's inspected by IMI at weighbridge and waste acceptance details recorded, i.e. Vehicle make, model, registration, owner details incl name, address and ATF details if applicable	At time of acceptance	Vehicle registration certificate supplied in case where Certificate of Destruction Required.
2	Initial inspection of ELV interior, boot and engine area of vehicle for rubbish, pressurised vessels and other unacceptable waste	At time of acceptance	Pressurised vessels and /or rubbish to be taken back off site by owner or vehicle rejected. In event that vehicle is inspected after owner has left all rubbish should be placed in appropriate bins. Any pressurised vessels must be removed to appropriate storage.
3	Accepted ELV's directed to stockpiling areas for de-pollution if required or storage area for transfer to Frag plant or Hammond Lane if already de-polluted by supplier, i.e. ATF facility	All ELV's depolluted within 1 working week of acceptance	All ELV's stored in concrete hard stand areas where any potential leakage is directed to surface water management system.

Administration

Stage	Procedure	Timeline	Notes
1	De-pollution book is completed for all ELV's processed through De-Pollution plant.	De-pollution book completed at time of de-pollution	Details of ELV make, model and registration are recorded and later transferred to electronic register.
2	Complete Certificate of Destruction (COD)	Within 2 weeks of de-pollution	Green copy to the last owner, yellow & White to Group EHS Mgr or Delegate, white to be forward to Department of Environment to de-register the vehicle.
3	Maintain COD electronic register	Updated on a monthly basis	

De-Pollution

Stage	Procedure	Timeline	Notes
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1	Detailed inspection of ELV interior, boot and engine area of vehicle for rubbish, pressurised vessels and other unacceptable waste. This is particularly important for Hegarty Metals to prevent APD's.	Approx time to de-pollute one ELV is 30 minutes	Each vehicle is split into 3 compartments for inspection - interior or main cabin, boot and engine area. A large yellow X must be painted onto each compartment to verify inspection has being completed. The vehicle roof should be marked for interior or main cabin inspection. The yellow X mark verifies that compartment has being inspected and is free from pressurised vessels and other unacceptable wastes. If a particular compartment cannot be accessed then a yellow circle mark should be placed in that area. Further inspections of this compartment will be completed by material handler operator prior to shredding as part of waste acceptance procedures.
2	Inspect vehicle for all major components		Engine, gearbox, running gear and all major parts must be there
3	Remove Battery		Place in designated bin supplied by Rilta Environmental
4	Remove Fuel Filler Cap		If detachable type, place in scrap metal bin
5	Remove Oil Filler Cap		Place in scrap metal bin
6	Set Heater Control in car to maximum heat		To allow all liquid to flow out at stage 15
7	Lift Vehicle off ground with fork-lift		Approx. 150mm is sufficient height
8	Remove 4 wheels and spare wheel		Set aside for removal of lead weights and tyre disposal
9	Remove any parts known to contain mercury		Place in designated bin supplied by Rilta Environmental
10	Place Vehicle on De-Pollution Rig		Ensure vehicle is secure and move access ladder into place
11	De-gas Air conditioning unit (If Fitted)		Specialist tool in place for degassing
12	Drain Engine Oil from sump		Leave tray in place for remainder of process
13	Remove Oil Filter		Place in designated bin
14	Drain Transmission Oil		Transferred to storage tank for removal by Rilta Environmental
15	Drain Rear Differential Oil (if applicable)		Transferred to storage tank for removal by Rilta Environmental
16	Drain Coolant		Transferred to storage tank for removal by Rilta Environmental
17	Drain Brake Fluid		Transferred to storage tank for removal by Rilta Environmental
18	Remove Catalytic Converter (if Fitted)		Place in designated bin for export
19	Drain Window Washer Bottle		Transferred to storage tank for removal by Rilta Environmental
20	Drain Brake Reservoir		Transferred to storage tank
21	Drain Clutch Reservoir (if applicable)		Transferred to storage tank
22	Drain Power Steering Reservoir (if fitted)		Transferred to storage tank for removal by Rilta Environmental
23	Drain Fuel Tank		Examine fuel in inspection glass and divert to correct storage tank
24	Drain Shock Absorbers or remove Suspension Fluid		Specialist tool in place for draining the fluid
25	Remove Vehicle from De-pollution Unit		Using forklift
27	Remove or deploy Air-Bags in situ (if fitted)		Specialist tool in use
28	Remove Vehicle to Shredding Area (Hegarty Metals) or stockpiling area for transfer to Hammond Lane		Using forklift

The sequence of events can be altered for reasons of operation efficiency, but stage 13 (draining engine oil) must be carried out at the start of the process to allow the oil to gravity drain.

FORM REVISION HISTORY**DOCUMENT TITLE** ELV Acceptance and De-Pollution Procedure**DOCUMENT NUMBER** EHSP020

REV	DATE	DESCRIPTION OF CHANGE	AMENDED BY	APPROVED BY
A	21/02/2006	Amd 030 New Document	K FAHY	K FAHY
B	12/02/2007	Amd 083 ATF	I MURPHY	K FAHY
C	22/11/2007	Amd 120 Incl HMPIL	K FAHY	K FAHY
D	02/10/2008	Amd 186 incl One51 & Rilta	K FAHY	K FAHY
E	16/03/2009	Amd 197 incl tool for degassing air bags and draining shock absorber fluid	K FAHY	K FAHY
F	31/03/2011	General Review	MOK	M BERGIN
G	04/08/2011	Review for inspections for pressurised vessels	M Bergin	K Byrne
H	13/10/2011	Review for new Limerick, Galway and Cork facility permit requirments.	MOK	M BERGIN

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APPENDIX 4

WEEE Decontamination Procedures

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RILTA Environmental Ltd.			
EMS PROCEDURE MANUAL			
TITLE	Management of waste Oil Filled Equipment	REF	
ISSUED BY	Colin Lennon	APPROVED BY	
DATE	28/03/2011	PAGE	1 of 5

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Revision	Description	By	Approved	Date
000		C. Lennon		28/03/2011

1.0 Purpose

To document the procedures for the acceptance, testing and disposal of obsolete & waste oil filled electrical equipment (OFE) including known and suspect PCB (Polychlorinated Biphenyls) holdings.

2.0 Scope

The procedure outlined in this document conforms to the guidelines laid out in the Management Plan for Polychlorinated Biphenyls (PCBs) in Ireland published by the EPA in August 2008.

3.0 Responsibility

Operations Director & Environmental Manager

4.0 Procedure

- Obsolete and waste transformers will be transported under C1 hazardous waste consignment note and delivered by appropriately licensed and permitted carriers to the Cedar Site covered by EPA waste licence no. W0185-01.
- Upon arrival of the load at the Cedar site
 - Complete the C1s by completing the following fields:
 - The net weight of the load
 - Ensure the delivery vehicle driver has properly completed Part B of the C1
 - Complete sections 16, 17 & 20
 - Count the number of units to ensure that the number of units on the ESB C1 annex match the actual number of units delivered
 - If the number of units match enter the Rilta Serial number using permanent marker on a prominent position on each unit.
 - If the numbers of units do not match make a note on the annex of the difference.
- Write the first 5 digits of the RILTA s/n on the top of each page of the ESB Annex (acts as a quick reference)
- Make a copy of the ESB annex to be used when de-polluting the units.
- OFE will be offloaded and stored in a quarantine area pending testing or decommissioning.
- OFE manufactured during or prior to 1989 will be assumed to contain PCBs. OFE with no identifiable date of manufacture will also be assumed to contain PCBs.

RILTA Environmental Ltd.			
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These items of OFE will be quarantined pending testing as per Rilta Environmental EMS procedure on the Testing of PCB wastes.

- Subject to analysis results the following actions will be taken.
- Pre 1989 and unidentifiable OFE will not be decommissioned until laboratory testing has been completed.
- During de-commissioning of OFE gaskets and seals may be encountered that are manufactured from asbestos, if confirmed or suspect asbestos gaskets/seals are encountered the operator will put on P3 respiratory protection mask, gently remove the gasket/seal to ensure that no damage occurs during removal. The suspect item will be placed into red-asbestos bags pending confirmation on the nature of the item. The bags will be labelled with the asbestos a-warning label as per REACH guidelines.
- If the gasket is determined to be manufactured from asbestos it will be placed into UN approved packaging and exported for disposal under TFS to facilities in Germany.

PCB concentration <50 mg/l

- Transformer oil will be drained from the transformer
- When de-polluting each item find the ESB s/n on the ESB annex and fill in the RILTA s/n and the date de-polluted in the columns provided
- The following data for each piece of OFE decommissioned will be recorded
Transformer Decommissioning Log
 - Date
 - Rilta s/n
 - Manufacturer
 - KV_a
 - Year of Manufacture
- The copies of the ESB annexes are to be kept on one clipboard
- The transformer decommissioning log is to be kept on another clipboard
- Recovered oil will be treated via the Rilta Environmental Oil treatment facility (W0192-03)
- Waste metals will be sent for recycling and recovery via the facilities listed in annex

4

RILTA Environmental Ltd.			
EMS PROCEDURE MANUAL			
TITLE	Management of waste Oil Filled Equipment	REF	
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DATE	28/03/2011	PAGE	3 of 5

PCB concentration >50 mg/l

- The unit(s) will be safely moved using any necessary spill control measures such as drip trays or bunded containers to the designated storage area without removing the PCB oil content
- The client will be notified of the test results
- Each unit will be inspected to ensure its suitability for transport by sea. Particular attention will be paid to possible leaks and rusty/unsafe hinges and joints and overall integrity of the unit.
- If suitable for transport, the relevant TFS paperwork will be prepared and all authorities notified.
- The unit will be transported whole in a suitably bunded tray as per ADR & IMDG regulations and EPA guidelines.
- If the unit is deemed unsuitable for transport the following procedure will apply:
- The unit(s) will be safely moved to the designated storage area without removing the PCB oil content.
- It will be secured in place to ensure no spills take place.
- Transformer oil will be drained from the unit
- The oil will be transferred into UN approved drums and stored pending export for treatment and disposal via the facilities listed in annex 4
- The empty unit(s) will be packaged and labelled as per ADR and IMDG and exported for treatment and disposal via the facilities listed in annex 4

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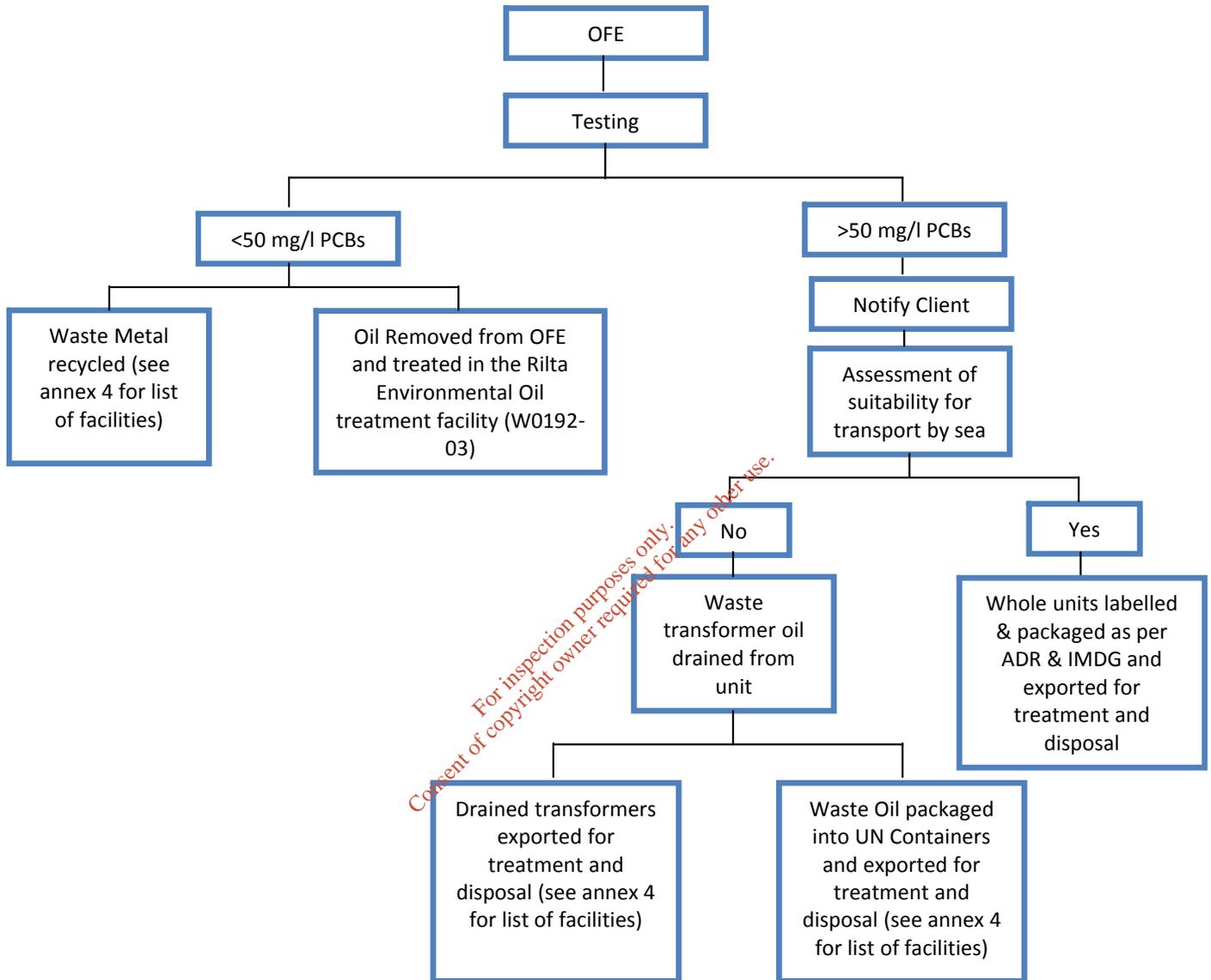


Table 1.0 PCB management flow chart

OFE will be stored and all processing will be carried out in a remotely banded area (see annex 1).

To avoid cross contamination of equipment two separate sets of pumping equipment and piping will be provided, one for PCB concentrations <50mg/l and the other for PCB concentrations >50mg/l.

Two separate decanting areas will be set up for the decanting of the transformer oil. Decanting will be carried out on steel fabricated drip trays with rear and side splash guards similar in design to that photographed on page 32 of the EPA management plan for PCBs.

RILTA Environmental Ltd.			
EMS PROCEDURE MANUAL			
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All processing will be carried out by appropriately trained personnel equipped with the follow PPE:

- Class 5 Cut Resistant Gloves which complies to standard EN388 and EN407
- Safety footwear with antislip soles, sole protection and toe guards
- Overalls
- Safety Glasses

If PCB concentration is greater than 50ppm the following will also be worn:

- Nitrile or butyl rubber gloves – do not use Latex gloves
- Eye protection
- Coveralls impervious to PCBs such as Tychem F
- Respiratory protective devices with a full face mask fitted with a class P3 cartridge/canister suitable for use with PCBs is required when handling PCB liquids at temperatures >55°C, where there is a significant amount of PCB liquid exposed to the air, or where adequate ventilation is not possible.

Emergency Procedures will be put in place to deal with the following

- First Aid treatment following exposure to PCB containing oils
- Fire involving PCB containing oils
- Leak / Spill of PCB containing oils

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