

# Abbott Vascular, Clonmel

## Annual Environmental Report (AER) 2009



<b>Name:</b>	Abbott Vascular, Ireland. Clonmel Site.
<b>Location address:</b>	Cashel Road, Clonmel, Tipperary.
<b>IPPCL Application Ref:</b>	Reg No: P0847-01
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Signature		
Date		

TABLE OF CONTENTS

**1.0 INTRODUCTION ..... 1**

    1.1 General ..... 1

    1.2 Brief Site Description ..... 1

    1.3 Environmental, Health and Safety Policy..... 2

    1.4 Organisational Structure ..... 3

**2.0 SUMMARY OF EMISSIONS 2009 ..... 5**

    2.1 Emissions to Atmosphere ..... 5

    2.2 Emissions to Sewer (Trade Effluent) ..... 6

    2.3 Emissions to Surface Water ..... 7

    2.4 Waste Management..... 8

    2.5 Resource consumption ..... 10

    2.6 Environmental incidents & complaints ..... 10

    2.7 Agency monitoring and enforcement ..... 11

**3.0 MANAGEMENT OF THE ACTIVITY ..... 12**

    3.1 Environmental Management Programme (EMP)..... 12

    3.2 Pollution Release and Transfer Register (PRTR)..... 12

**4.0 LICENCE SPECIFIC REPORTS..... 14**

    4.1 Noise Monitoring Report Summary..... 14

    4.2 Solvent Management Plan..... 15

    4.3 Energy Efficiency Audit Report Summary..... 20

    4.4 Decommissioning Management Plan Review ..... 24

    4.5 Environmental Liabilities Risk Assessment Review ..... 24

    4.6 Statement of Measures..... 24

    4.7 Testing & Inspection of underground tanks, sewer pipes and bunds..... 25

    4.8 Other reports required to be submitted in the AER ..... 25

    4.9 Other reports submitted to the EPA during 2009..... 26

**APPENDIX A – AER RETURNS WORKSHEET**

**APPENDIX B – EMP REPORT 2009**

**APPENDIX C – 2010 EMP PROPOSAL**

## 1.0 Introduction

### 1.1 General

Abbott Ireland (Abbott), Cashel Road, Lawlesstown, Clonmel, Co. Tipperary, holds an IPPC Licence register no. P0847-01, for “*The use of coating materials in processes with a capacity to use at least 10 tonnes per year of organic solvents*”. The Licence was issued by the EPA on 16th of December 2008.

This Annual Environmental Report (AER) covers the period from January 01, 2009 to December 31, 2009 and has been prepared in accordance with the EPA ‘Guidance Note for Annual Environmental Report’ and other relevant updated guidance notes as provided by the EPA on the agency website ([www.epa.ie](http://www.epa.ie)). This is the first full year’s AER for the site as only a brief summary of activities between 16<sup>th</sup> December and the 31<sup>st</sup> December 2008 was required for last year’s submission.

### 1.2 Brief Site Description

The site is located on a 7.8 hectare site, 2 km north of Clonmel town. Abbott is a medical device manufacturer which manufactures bare metal cardiac stents, drug coated cardiac stents and balloon dilatation catheters. There are three main production areas:

#### 1. Implants (Bare Metal Stent Manufacture)

The stent manufacturing process involves the cutting of small diameter metal tubes using high powered laser cutters. Stents are polished and cleaned with acids and solvent.

#### 2. Stent Delivery System (SDS)

In SDS stent delivery catheters are assembled, the principal operations are physical assembly, tubing necking (ie, thinning tubing down to a specific diameter) and bonding (usually by table-top laser).

#### 3. Drug Eluting Stent (DES)

In the DES process the stent is coated with a solvent based drug/polymer solution. Solvents are also used here for cleaning spraying equipment.

Support site services include offices, canteen, laboratories, shipping, utilities, etc.

The site currently employs approximately 1,600 personnel and operates two 8-hour shifts per day, Monday to Thursday, and two 7-hour shifts on Friday.

### 1.3 Environmental, Health and Safety Policy



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Page 1 of 1

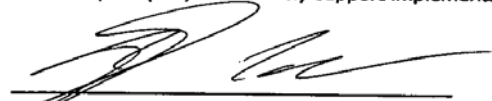
Abbott Vascular  
Environment, Health & Safety Policy

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Abbott is committed to the protection of human health, safety and the environment in all of the global communities where we conduct our business. Attainment of our long-range targets to eliminate employee injuries, to lower environmental emissions, and to reduce our use of natural resources in all aspects of our operations remains a top priority. Meeting our targets, along with all of our other environment, health and safety objectives, is the continuation of a long legacy of responsible business practices at Abbott that reflect our core values: *Pioneering, Achieving, Caring and Enduring*. Toward this end our current key objectives include:

- Fostering a work environment that promotes employee health and productivity, and is ultimately free of injuries;
- Continuously improving the efficiency and sustainability of our business activities and products, resulting in the lowering of greenhouse gas emissions and water use, and minimising wastes destined for landfill, including working with our suppliers to reduce their environmental impact on our activities by:
  - Use of processes and practices that avoid, reduce or control pollution
  - Using energy, resources and raw materials efficiently
  - Managing hazardous materials responsibly
  - Maintaining trained personnel to control and mitigate emergencies
- Expecting that contractors doing work on behalf of Abbott conform to regulatory requirements and meet applicable internal EHS standards;
- Implementing processes in all aspects of the business that ensure compliance with applicable Irish and EU laws and regulations, corporate policies, industry codes and best practices;
- Establishing meaningful goals and strategies annually, for continuous EHS improvement within the enterprise and reviewing our progress toward achieving them;
- Routinely monitoring our operations for accountability to this policy.

This policy applies to all Abbott Vascular Clonmel Employees. It is the responsibility of every employee to work safely, to adhere to the letter and spirit of this policy, and to report practices or conditions which are inconsistent with this policy or which pose recognised or unacceptable risks to human health or the environment. The primary responsibility for implementation of this policy rests with the site Vice President and Directors. In addition, every Abbott leader shall promote a workplace climate that enables employees to practice these principles, and actively support implementation of this policy.

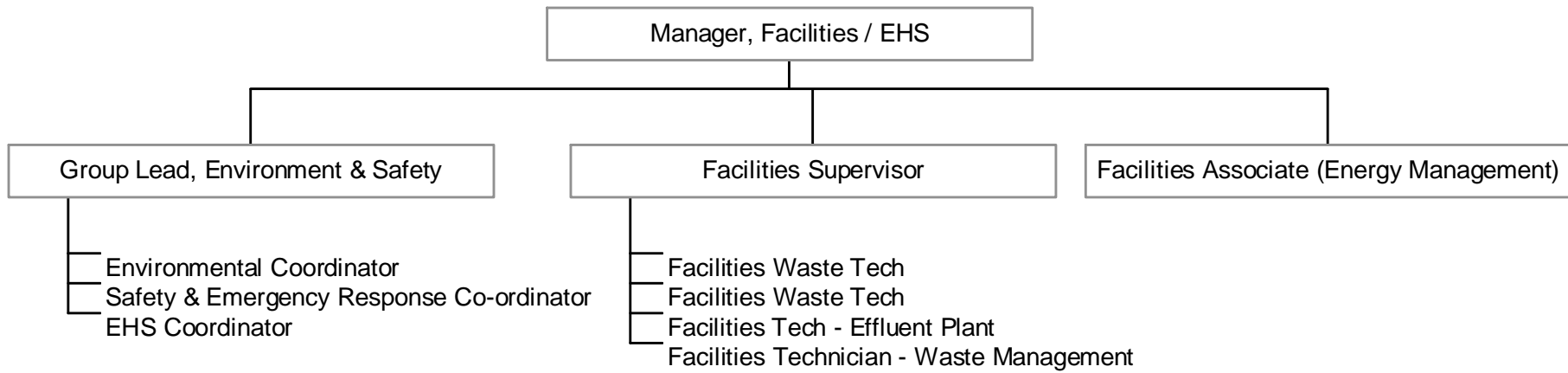


Ger Cronin  
Divisional Vice President, International Operations

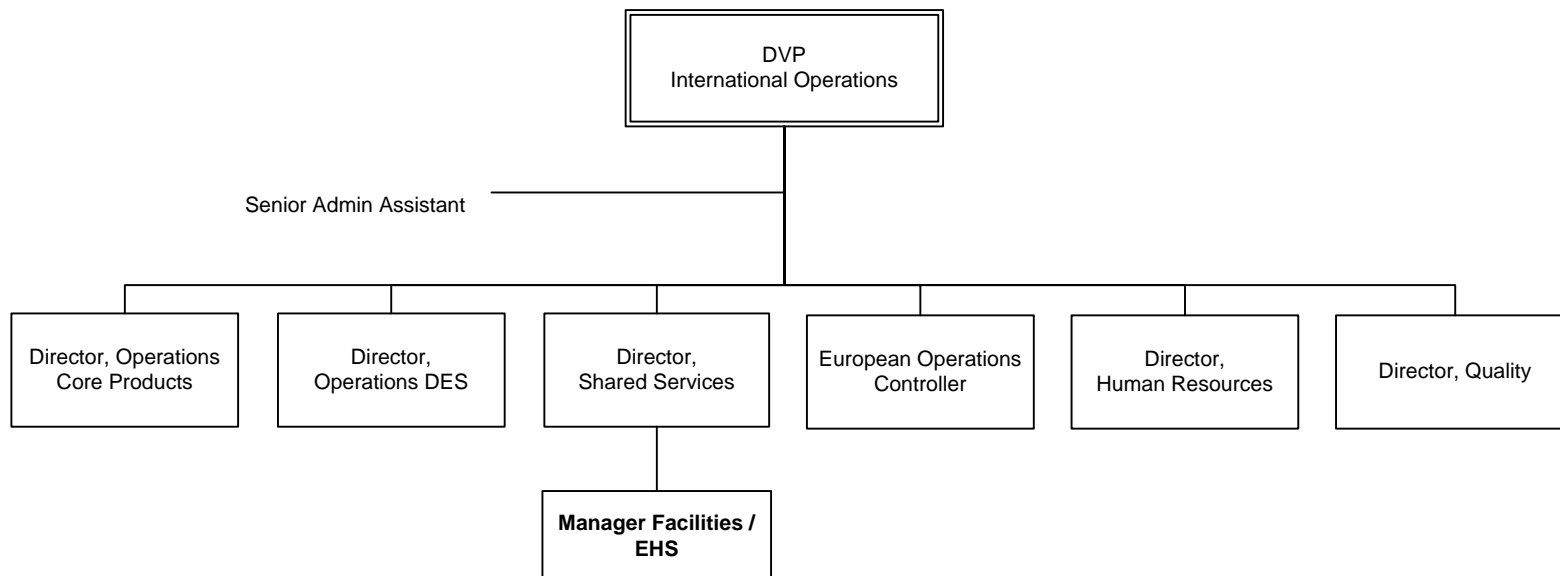
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### 1.4 Organisational Structure --- ENVIRONMENTAL



# ADMINISTRATOR



## 2.0 Summary of Emissions 2009

### 2.1 Emissions to Atmosphere

A summary of emissions to atmosphere for 2009 are outlined in Table 2.1. Sampling of emissions was conducted in accordance with Schedule B.1 & C.1.2 of the Licence for the operational licensed emission points. Of the eight main emission points only four (A2-1, A2-2, A2-7 and A2-8) were operational during 2009. The results for these four emission points were calculated using the relevant quarterly or biannually sample data. A mass emission (kg/hr) was calculated for each sample and an average figure over the year was determined for each parameter. The average value was then multiplied by the hours of operation to retrieve an annual mass emission value.

**Table 2.1** Summary of Emissions to Atmosphere 2009

Parameter	Emission Point	Monitoring frequency	Licensed Mass Emission Limit (Kg's)*	Mass Emissions (Kg's) 2009
Volatile Organic Carbon	A2-1	Quarterly	4785	127.9
	A2-2		3790	898.0
	A2-7		4785	56.5
	A2-8		3790	63.75
Pharmaceutical Dust	A2-1	Biannually	41**	0.16
	A2-2		41**	<L.O.D.
	A2-7		4.1	<L.O.D.
	A2-8		4.1	<L.O.D.

L.O.D. – Limit of Detection

\*Based on the mass emissions limit (kg/hr) x 16 (hrs/day) x 255 (days/yr).

\*\*Limits applicable until the 16<sup>th</sup> December 2009, thereafter the limit decreases to 4.1 Kgs/year (@ 16 hrs day, 255 days/year).

There were no exceedances of Emission Limit Value's (ELV's) for emissions to atmosphere during 2009.

## 2.2 Emissions to Sewer (Trade Effluent)

A summary for trade effluent emissions to sewer for 2009 are included in Table 2.2. Sampling of emissions was conducted in accordance with Schedule B.3 & C.3.2 of the Licence for the licensed emission point, SE-1. The results are based upon average composite sample monitoring data for each parameter. The average figures were multiplied by the total annual flow to calculate the mass emissions for 2009.

**Table 2.2** Summary of Emissions to Sewer 2009

Emission Point	Parameter	Monitoring frequency	Licensed Mass Emission Limit (Kg's)*	Mass Emissions (Kg's) 2009
SE-1	Volume	Continuous	73,000 m <sup>3</sup>	10,135 m <sup>3</sup>
	Temperature	Continuous	35°C	11.53 °C (Max)
	pH	Continuous	5-10	5.94 - 9.32
	BOD	Quarterly	29,200	939
	COD	Quarterly	45,625	3,955
	Suspended Solids	Quarterly	29,200	1,756
	Orthophosphate (as P)	Quarterly	730	28.3
	Oils, Fats and Grease	Quarterly	2,738	53.2
	Sulphate	Quarterly	3,650	423
	Total Heavy Metals	Annually	10.1	1.9
	Toxicity**	Annually	10 T.U.	< 2 T.U.
	Organics: Acetone	Annually	-	63.9
	Organics: IPA	Annually	-	42.6
	Other Organics***	Annually	-	<L.O.D

\*Based on 365 days/year, i.e., kg/day Emissions Limit Values x 365.

\*\*Based on the results of testing on 3 aquatic species, results were 1.3, 1.4 and 1.9 Toxic Units. Respirometry testing was also completed and no inhibition to the sludge from the Clonmel WWTP was exhibited. Report submitted 16/07/2009.

\*\*\* Results for other Organic Compounds (other than Acetone and IPA) were below their respective limits of detection (LOD) – this includes DCM, Heptane, Cyclohexanone, Methanol and Acetonitrile.

- No Licence Limit

There were no exceedances of ELV's for trade effluent emissions to sewer during 2009.



### 2.3 Emissions to Surface Water

A summary of emissions to surface water for 2009 are included in Table 2.3. Sampling of emissions was conducted in accordance with Schedule C.2.3 of the Licence for the licensed emission point, SW-1. The range of results for each parameter is presented.

**Table 2.3** Summary of Emissions to Surface Water 2009

Emission Point	Parameter	Monitoring frequency	Result 2009
SW1	Visual Inspection	Weekly	No Issues
	pH	Weekly	6.86 - 7.65
	Conductivity (uS/cm)	Monthly	248 - 1,053
	COD (mg/l)	Monthly	<10 - 36

## 2.4 Waste Management

Abbott maintains a full record of all waste arising on site. From this information it is possible to compile a yearly summary of all hazardous and non-hazardous waste produced.

Table 2.4.1 presents the yearly totals for hazardous waste produced on site while Table 2.4.2 presents the yearly totals for non-hazardous waste. An overall summary of waste arisings is presented in Table 2.4.3. Disposal/recovery routes of each waste stream and permit/licence details of waste contractors are outlined in the AER Returns Worksheet and submitted electronically by uploading to the EPA website as required by the Licence. A copy of the AER Returns Worksheet has also been enclosed as Appendix A.

**Table 2.4.1** Summary of Hazardous Waste 2009

Waste Type	EWC Code	Quantity (T) 2009
Solid waste potentially contaminated with trace quantities of Drug (everolimus)	070513*	96.97
Neutralised wet bench waste	110111*	53.14
Drug (everolimus) solvent waste	070504*	39.78
Solid waste (e.g. gloves, wipes, aprons, etc.) contaminated with trace amounts of acid - Sulphuric, hydrochloric, phosphoric and nitric.	150202*	38.47
6:1:1 Vision polishing solution	060106*	29.22
Crushed Glass contaminated with flammable liquid residue	150110*	12.9
Empty uncleaned plastic bottles/glass jars that previously contained orthophosphoric acid	150110*	12.41
Wipes contaminated with isopropanol	150202*	7.97
E.272 Vision	110106*	6.2
Electroglo	060101*	0.33
Plastic bottles that previously contained Waste E.272 Vision	150110*	1.88
Unneutralised wet bench waste	060106*	7.78
Air Filters contaminated with Everolimus	150202*	1.33
Nitric Acid	060105*	0.83
Dismantled Wet Bench Units	170903*	3.46
WEEE (from Dismantled Wet Bench Units)	200135*	1.75
Empty Contaminated Drums	150110*	1.49
Glassware contaminated with Nitric Acid	150110*	0.7
Empty Solvent Canisters	150110*	0.08
Empty Vision Solution Overdrummed	150110*	0.04
Sporklenz	160508*	0.32
Gas Discharge Lamps (Fluorescent Tubes)	200121*	0.26
Interceptor waste (oily water)	130507*	1
<b>TOTAL</b>		<b>318.3</b>

**Table 2.4.2 Summary of Non-hazardous Waste 2009**

Waste Type	EWC Code	Quantity (T) 2009
Mixed Municipal Waste	200301	164.71
Cardboard	150101	60.29
Paper	200101	48.4
Timber	200138	41.93
Metal	200140	29.45
Food/Compost	200108	30.42
Mixed Packaging	150106	35.8
Const. and Indust. Dry Mixed	200307	15.6
Plastic	150102	8.23
Glass	200102	3.6
Computer Equipment	160214	1.38
Canteen Oil Waste	200125	1.83
Grease from Grease Trap	200125	16.8
Toner Cartridges	080318	1.77
<b>TOTAL</b>		<b>460.21</b>

**Table 2.4.3 Summary of Waste Arisings**

Waste	2009 (Tonnes)
<b>Total Waste Quantity</b>	<b>778.51</b>
Total waste disposed	411.10
Total waste recycled	367.41
<b>Non-hazardous Waste</b>	<b>460.21</b>
Non-hazardous disposed	134.75
Non-hazardous recycled	325.46
<b>Hazardous Waste</b>	<b>318.3</b>
Hazardous disposed	276.35
Hazardous recycled	41.95

## 2.5 Resource consumption

A summary of energy and water consumption for 2009 is presented below.

**Table 2.5.1** Summary of Energy Consumption 2009

Year	2009
Electricity (MWh)	22,781.7
Natural Gas (MWh)	13,638.5
Diesel (L)	200

**Table 2.5.2** Summary of Water Consumption 2009

Year	2009
Water (m <sup>3</sup> )	51,001

## 2.6 Environmental incidents & complaints

There was one Category 3 (non-urgent) incident at the site in 2009. This incident is summarized in Table 2.6.

**Table 2.6** Summary of Environmental Incidents

Incident	Date	Cause	Corrective Action
Release of 361 Kg's of refrigerant gas, HFC134a	August	Leak	Leak repaired and chiller system fully charged.

No environmental complaints were received by the site in 2009.

## 2.7 Agency monitoring and enforcement

An introductory site visit was undertaken by the sites' EPA inspector on the 31/07/09. There were no non-conformances issued as a result of the site visit. Two observations were noted which did not require corrective action as appropriate correspondence had been received by the Agency by the time the Agency's audit report was issued.

The following table summarises emissions monitoring undertaken by the Agency in 2009.

**Table 2.7** Agency Emissions Monitoring 2009

Monitoring Type	Monitoring Date	Non-compliance with ELV's
Trade Effluent Monitoring (SE-1)	22/10/2009	None*

\* No results were outside the specified ELV's as per report (Ref. gc02kb.doc) received from the Agency, 23/12/2009.

There was no significant difference between the compliance monitoring conducted by site on Trade Effluent Emissions and the Agency's monitoring of the Trade Effluent.

### 3.0 Management of the Activity

#### 3.1 Environmental Management Programme (EMP)

##### 3.1.1 EMP Report 2009

Abbott Vascular Clonmel's 2009 Environmental Management Program consisted of 33 separate targets and objectives and seven 5-year goals covering seven of the sites most significant environmental aspects. Three projects are ongoing and will be completed as part of the sites 2010 Environmental Management Program. Five out of the sites seven 5-year goals (normalised for sales) were met during 2009 due to economies of scale arising from production increases in the DES manufacturing area. A full update of the sites 2009 EMP is provided in Appendix B.

##### 3.1.2 EMP Proposal 2010

Abbott Vascular Clonmel's 2010 Environmental Management Plan has been prepared and is included in this document (Appendix C) for the Agencies review and approval. The 2010 programme/schedule consists of seven objectives with new 5-year goals being set for five of these objectives.

#### 3.2 Pollution Release and Transfer Register (PRTR)

##### 3.2.1 Report 2009

Under the European Pollutant Release and Transfer Register Regulation (EC) No. 166/2006, and subsequently the site's Licence, Abbott are required to annually report emissions of relevant substances and wastes to the EPA. Abbott reviewed the 91 PRTR pollutants (detailed in Annex II of EC Regulation No. 166/2006) to determine the pollutants relevant to Abbott's activities. The following PRTR substances have been identified as emitted from the site and are reported in the PRTR for 2009:

Pollutant No.	Pollutant
2	Carbon Monoxide
3	Carbon Dioxide
4	Hydro-fluorocarbons (HFCs) - HFC134A
7	NMVOC's
8	Nitrogen Oxides (NOx/NO <sub>2</sub> )
11	Sulphur Oxides (SOx/SO <sub>2</sub> )
17-24	Metals
35	Dichloromethane (DCM)
80	Chlorine and inorganic compounds (as HCL)

Other pollutants which are outlined in the Licence are also tracked and reported. The quantities emitted have been reported on the AER Returns Worksheet and submitted electronically by uploading to the EPA website as required by the Licence. A copy of the AER Returns Worksheet has also been enclosed as Appendix A. In addition, a copy of the PRTR has been submitted to the Water Services Authority (South Tipperary County Council) as required by the Licence.

### *3.2.2 Proposal 2010*

The substances to be tracked and reported for 2010 will remain the same as 2009, unless any changes in processes results in a new PRTR pollutant. The Agency will be notified accordingly should any new substances/processes require approval.

## 4.0 Licence Specific Reports

### 4.1 Noise Monitoring Report Summary

Abbott is required to conduct a noise survey of site operations annually. An environmental noise assessment was conducted on 27<sup>th</sup> and 28<sup>th</sup> January 2009 by Abbott Global EHS. Monitoring and measurements were based on the International Standard ISO 1996-1, ISO 1996-2 and ISO 1996-3: Description and Measurement of Environmental Noise. In addition the survey was conducted in accordance with the Agency’s Guidance Document on Environmental Noise Surveys.

The nearest noise sensitive location (NSL) was monitored at daytime and night time. A summary of the results, including Licence Limits are presented in Table 4.1.

**Table 4.1** Summary of results from the Annual Noise Survey 2009

Location	Description	L <sub>Aeq</sub>		Tonal	Noise Sources
		Daytime	Nighttime		
<b>Licence Limits</b>		<b>55</b>	<b>45</b>	<b>None</b>	
NSL1	House situated approx 25m east and 30m north of the roundabout at the site entrance and 200m from site boundary	68.2	60.9	No	The only noise source is traffic. No audible noise was coming from the Abbott site

The nearest NSL to the site is a private house situated approximately 200 meters to the north east of site boundary. Monitoring at the NSL indicated no tonal noise and that the main noise source is traffic with the Abbott Vascular contribution being negligible.

Monitoring was also conducted at 4 boundary locations to monitor for any tonal noise arising from the site. A tone was detected at one of the locations at daytime and night time. This boundary location, N2, is bordered by fields to the west and the industrial estate to the north and not in the vicinity of any Noise Sensitive Locations (NSL). This tonal noise was attributed to transformer room fans, air compressors and chillers inside the Central Utilities Building. In February 2009 an energy reduction project reduced the number of chillers required to support the HVAC. Subsequent noise monitoring confirms that the tonal noise at the boundary has been eliminated.



## **4.2 Solvent Management Plan**

### **4.2.1. Introduction**

A Solvent Management Plan (SMP) is required to be submitted for each calendar year. An SMP for 2009 has been prepared based on a mass balance approach and taking into account the guidelines outlined in Annex III of the Solvents Directive<sup>1</sup>.

Solvents in use at Abbott, as outlined in the IPPCL application, are Acetone, Isopropyl Alcohol (IPA), Cyclohexanone, Heptane, Dichloromethane (DCM), Methanol and Acetonitrile.

### **4.2.2. Solvent Mass Balance**

A mass balance on solvent input and output has been performed on each of these solvents for 2009 as outlined in Table 4.2 below.

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<sup>1</sup> Council Directive 1999/13/EC on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain activities and installations

Table 4.2 Solvent Management Plan Mass Balance 2009 (Kg's)

Component	Methanol	IPA	Acetone	DCM	Cyclohexanone	Heptane	Acetonitrile	TOTAL
I1 – Inputs	98	20618	15806	67.77	397	215	1512	38714
I2 – Internal recycle (N/A)	0	0	0	0	0	0	0	0
<b>I - TOTAL INPUT</b>	<b>98</b>	<b>20618</b>	<b>15806</b>	<b>68</b>	<b>397</b>	<b>215</b>	<b>1512</b>	<b>38714</b>
O1 Solvent emissions in waste gases	0	0	1800	0	39	0	0	1839
O2 Solvents lost in water	0	43	64	0	0	0	0	106
O3 Solvents residue on Product	0	0	0	0	0	0	0	0
O5 Solvent Treated or Reacted	0	0	0	0	0	0	0	0
O6 Collected Waste Solvent	0	2741	49	0	0	0	0	2790
O7 Solvent for sale as a product (N/A)	0	0	0	0	0	0	0	0
O8 Solvent for reuse elsewhere	206	15340	9348	16	457	65	1951	27384
O9 Solvent released in other ways (N/A)	0	0	0	0	0	0	0	0
<b>O-TOTAL OUTPUT</b>	<b>206</b>	<b>18124</b>	<b>11261</b>	<b>16</b>	<b>496</b>	<b>65</b>	<b>1951</b>	<b>32119</b>
<b>O4 FUGITIVE EMISSIONS/ UNACCOUNTED</b>	<b>-108</b>	<b>2536</b>	<b>4609</b>	<b>52</b>	<b>-100</b>	<b>151</b>	<b>-439</b>	<b>6701</b>

Fugitive Emissions % **17.31**

The data sources for each of the data sources for each input and output required to complete the mass balance are outlined below (these reflect the terminology used in the Solvents Directive):

### **Solvent Inputs (I):**

**I1 - Solvent inputs** – the amount of fresh solvent input to the process was calculated from amounts issued to production/laboratories by Supply Chain during 2009.

**I2 – Internal Recycle** - Recovered solvent used in the process is not considered in the solvent mass balance, as only fresh solvent is used as an input at Abbott Vascular.

### **Solvent Outputs (O):**

**O1 - Solvent emissions in waste gases.** This has been calculated based on results of quarterly monitoring of main emissions points which were operational during 2009 – A2-1, A2-2, A2-7 and A2-8. Minor emissions points have not been included in this SMP as no monitoring of minor emission points was conducted in 2009.

**O2 - Solvents lost in water.** This has been calculated based on monitoring results for organic solvents in the trade effluent and the total trade effluent flow for 2009.

**O3 - Solvents residue on Product** - finished product (stents) are tested in the onsite Analytical Laboratory and the results for residual solvent on stents are typically zero.

**O4 - Fugitive Solvent Emissions** – fugitive emissions have been calculated based on solvent mass balance difference, i.e., the unaccounted value. In addition, solvents lost in water (O2) and solvent residue on product (O3) are required to be counted as fugitive emissions. Hence, the unaccounted value resulting from the mass balance, plus O2 and O3, has been taken as the level of fugitive solvent emissions from the site. That is,  $F = I1 - O1 - O5 - O6 - O7 - O8$  (unaccounted figure treated as fugitive emission).

**O5 - Solvent Treated or Reacted** (Absorbed or incinerated) - there is no solvent treatment on the main emission points. The only form of treatment of solvent emissions on site are the carbon filters in labcaire fumehoods where primer spraying takes place and also where filling of syringes with drug/solvent mix takes place. No calculated estimations of the amount of solvent destroyed in this manner were made during 2009 –this will be included as a recommendation for 2010.

**O6 - Collected Waste Solvent** – Waste containing solvent sent off site for disposal (as opposed to recovery) includes wipes used for cleaning with acetone and IPA. The content of IPA and acetone on these wipes has been estimated using results of weighing wipes before and after use. Solvent which is sent for reuse/recovery is classed under O8 (Solvent Reused/Recovered Off-Site) below.

**O7 - Solvent for sale as a product** - This term does not apply to the Abbott Vascular site.

**O8 - Solvent for reuse elsewhere** – this includes waste from Abbott Vascular which is sent off-site for recovery as the definition of recovery for reuse under the legislation is *'the use of organic solvents recovered from an installation for any technical or commercial purpose and including use as a fuel'*. Drums of solvent waste for recovery offsite were analysed for solvent content over 1 week. This was used as a basis to estimate the breakdown of all solvent sent off site for recycling during 2009.

**O9 - Organic Solvents released in Other Ways** - This term is not relevant to the Abbott Vascular site.

**Spillages/Incidents:** There were no incidents involving solvent during 2009.

#### **4.2.3. Discussion on SMP result - Assessment of compliance with VOC fugitive emission limit**

The mass balance shown above in Table 4.2, demonstrates that the unaccounted figure treated as fugitive emission is 17.3% of the solvent input, which is below the VOC fugitive emissions limit of 20% of the solvent input set by the sites IPPC licence. Hence, the site is compliant with the VOC fugitive emission limit.

#### **4.2.4. Recommendations**

As can be seen from the mass balance the main solvent output is mixed solvent waste for recovery/reuse offsite. Figures for this output are based on the analysis of the mixed waste solvent for the individual solvent content. Analysis of mixed solvent waste was conducted on 4 drums (1 week's solvent waste) in 2009. As not every drum of solvent that goes off site is analysed for individual solvent content, it is likely that some inaccuracies will be present in the estimates of each solvent in the waste. To obtain a more representative level of each solvent in this waste stream it is proposed to conduct analysis of waste solvent on a more regular basis, such as quarterly. This could give more accurate data for each of the solvents and reduce the inaccuracies for this output.

In addition, the amount of solvent destroyed by the carbon filters in the Labcaire units will be investigated for the 2010 SMP. Monitoring of minor emission points will also be conducted to more accurately determine the quantity of solvent in waste gas emissions from the site.

Solvent usage and fugitive emissions reduction targets and plans to meet those targets are outlined in the Environmental Management Programme's for Raw Material Use & Efficiency and Air Emissions.

### 4.3 Energy Efficiency Audit Report Summary

#### Introduction

An Energy Audit Report was compiled by an Abbott Facilities Associate in December 2009 based on the Agency’s Guidance Note on Energy Efficiency Auditing, 2003. The objectives of the audit were to:

- Review site energy performance (electrical/gas) since the base year in 2007;
- Summarise external energy audits and the main findings of those audits;
- Report on the audit and identify areas for improvement;
- Develop an improvement programme based on outcomes of the audit.

There were approximately 1600 people working onsite at the time of the report. The facility operates a 5 day, 2 x 8 hour shift basis with clean-room quality maintained over the course of the weekend. Occasionally there is overtime on Saturdays between 7am – 1pm.

#### Overview of Energy Management System

The current energy management system includes the following:

- Electrical consumption data is downloaded from the ESBI website. Detailed breakdown of site energy consumption is calculated using the information from the onsite Energy Brain (approximately 91 meters installed).
- Gas consumption data is provided by ESBI through monthly billing. The onsite BMS also records gas consumption data for the site and for the Combined Chilling & Power plant (CHP).
- Data from the Energy Brain Electrical Metering System & the Building Management System (BMS) is used to produce a monthly trend report for the key site utilities on site – HVAC, Chilled Water, Lighting, 208 Voltage System and Compressed Air. This trend report is updated monthly and has historical data from August 2008.

#### Energy Streams on site

Table 4.3 summarises the consumption of different energy streams at the site. (This has been updated to include all data for 2009 for the purposes of this AER)

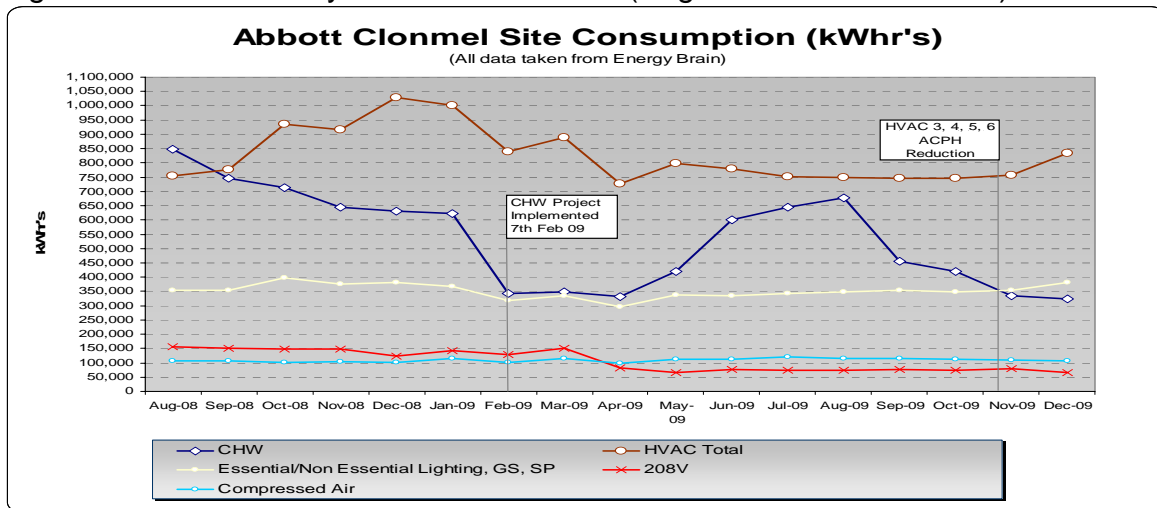
Table 4.3 Consumption of different energy streams on site

<b>Site Energy Usage 2009</b>		
<b>Energy Stream</b>	<b>Annual Quantity (kWhr)</b>	<b>Comments</b>
Electricity Consumed Onsite	24,342,522	Includes total imported from ESBI & generated by CHP
Electricity Imported	22,841,137	Includes total imported from ESBI only
Electricity Generated Onsite (CHP)	1,501,385	CHP Only
Natural Gas Total	13,638,532	Includes Gas consumed by Boilers, CHP & Kitchen
Natural Gas for CHP	3,514,880	CHP Only

## Main Energy Consumers

The main consumers of electricity on site are highlighted in the graph below which trends data from August 2008 to Dec 2009. Gas is only used for CHP and for heating boilers.

Figure 1 Main Electricity Consumers on site (August 2008 to Dec 2009)



## Energy Performance Indicators

The energy Key Performance Indicator (KPI's) developed for the site is based on Carbon Footprint (inclusive of contributions from electricity and Natural Gas), this information is presented to the management team at the Monthly Business Review and is available on line to all employees on site. The Carbon Footprint is noted in both absolute terms and Normalised to Sales, both in comparison to a 2008 Baseline. Example KPI is presented in Figure 2 below.

## Environmental Scorecard

✔ Metric Sponsor: Mike Ryan

✔ Metric Owner: Sean Cormican

Key Take Away

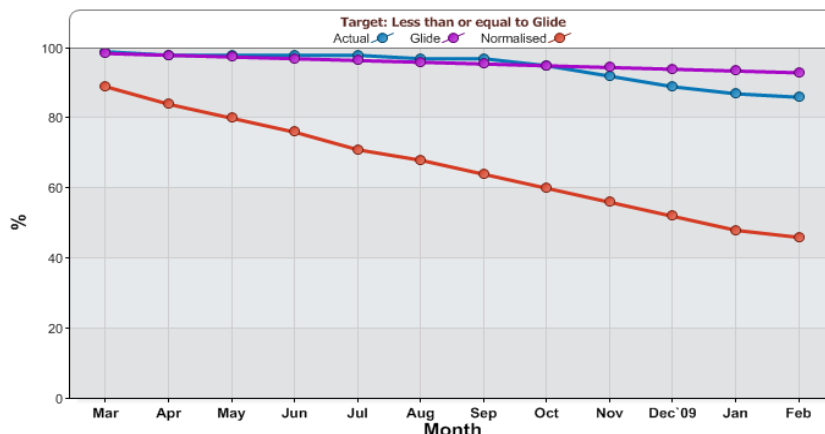


Figure 2 Environmental Scorecard (from Business Performance Scorecard)

Note : Glide sets target for annual improvement of 5%

Actual = actual Carbon Footprint as a percentage of 2008 Carbon Footprint

Normalised = Carbon Footprint Normalised to 2008 Sales

## Previous Audits/Actions Completed to date

Previous Energy Audits include:

- Abbott Global Energy Group Audit (GEM, July 2007)
- Sustainable Energy Ireland Audit (SEI, Sept 2007)
- HVAC Energy Savings Audit Report (Curley Smith Design Ltd., Nov 2007)
- Chilled Water Site Survey Audit Report (Johnson Controls/Retrofit Services, Aug 2008)

Energy Improvement Projects to date resulting from such audits include the following:

Table 2 Energy Improvement Projects completed to date

Area	Project Description	Payback Period (Approx)	Resp.	Date Complete	kWhr Reduction	Kg's CO2 Reduction
Lighting	232 x 28W Fluorescent tubes removed from corridors Time-clocks & PIR's fitted in toilets in Building B	2 Mths	Facilities Manager	Oct-07	34,000	16,595
	Intelligent Lighting System In New Building Now Running at 100% Efficiency	2 Yrs	Facilities Manager	Sept-07	190,000	92,738
HVAC's	Non cGMP Critical HVAC's Schedules Modified to Suit Occupancy Humidity & Temperature Deadbands introduced HVAC's Serving Unused Suites Shutdown: DES Suites 1, 3 and 4	3 Mths	Facilities Manager	Jan-08	2,500,000	1,220,249
	Air Change Rates Reduced in HVAC 3, 4, 5 & 6	1.5 Yr	Facilities Manager	Nov-09	1,591,200	776,664
Chilled Water System	Set-Point Temperature changed from 2°C to 5 °C in 1 °C steps	1 Mth	Facilities Manager	Feb-08	520,000	253,811
	System Performance Optimised	0.5 Yr	Facilities Manager	Feb-09	2,800,000	1,366,679
Building Envelope	Thermographic Survey of Building A & B Envelopes highlighted areas of poor insulation that were subsequently repaired.	0.5 Yr	Facilities Manager	Apr-08	500,000	102,250
CHP	Installation & Commissioning of a 1.0MW(e), 1.0MW(t) Combined Heat & Power Plant (CHP)	2.5 Yrs	Facilities Manager	Nov-09	Expected to generate 7.4GWhr Electrical/ 7.4GWhr Thermal	2,843,827



## Audit Recommendations

Detailed energy mapping has identified the following further energy improvement projects:

Table 3 Recommended Energy Improvement Projects

Area	Recommendation	Payback Period (Approx)	Resp.	Due Date	kWhr Reduction	Kg's CO2 Reduction
HVAC	Air Change Reduction in SDS/Implant HVAC. Set Back Air Changes Per Hour	1-1.5 Yrs	Facilities Manager	Jul-10	1,021,276	498,484
	Implement Relative Humidity Deadbands	<1 Yr	Facilities Manager	Apr-10	141,843 – 212,765	69,233-103,850
Chilled Water System	Modify sequencing of Cooling Towers on Chilled Water System to achieve better use of free cooling by minimizing chiller condense water temperature.	0.5 Yr	Facilities Manager	Apr-10	212,765 - 283,687	103,850 - 138,467
Lighting	Review of all lighting internal/external to assess opportunity for introduction of induction lighting:	4-5 Yrs	Facilities Manager	Aug-10	59,234	28,477
Heat Recovery	Install New Calorifier in Building B to optimize LPHW usage.	1.5 Yr	Facilities Manager	Jun-10	TBC	TBC
Heat Recovery/ HVAC	Pre-Heat feed water to all Humidifiers using heat exchanger thus utilising waste heat from CHP	2 Yr	Facilities Manager	Nov-10	TBC	TBC
General	Implement "Equipment Off" approach where possible in manufacturing areas	1-2 Yrs	Facilities Manager	Aug-10	212,765 – 496,453	103,850 - 242,318

## Audit Implications

The audit has identified the primary energy consumers on site as the HVAC and the Chilled Water System. Three other high energy consumers were identified as lighting, compressed air and 208 Voltage System. These key energy consumers will continue to be the focus of energy improvement programme's over the coming years.

#### **4.4 Decommissioning Management Plan Review**

The Decommissioning Management Plan (DMP) was submitted to the Agency in September 2009. There are no proposed amendments to the DMP at this point.

#### **4.5 Environmental Liabilities Risk Assessment Review**

The Environmental Liabilities Risk Assessment (ELRA) was submitted in November 2009. There are no amendments to be made to the ELRA at this time.

#### **4.6 Statement of Measures**

A statement of measures in relation to prevention of environmental damage and remedial actions (Environmental Liabilities) is required to be submitted in the AER.

Abbott Corporation will act as guarantor for any environmental liabilities.

Environmental liabilities on site will continue to be controlled as outlined in the ELRA. There was one mitigation measure recommended in the ELRA (installation of an isolation system on the surface water to prevent discharge of contaminated firewater in the event of a fire) which is due to be implemented in 2010.

#### **4.7 Testing & Inspection of underground tanks, sewer pipes and bunds**

No integrity testing or inspection of underground pipes, tanks and bunds was conducted in 2009. The testing and inspection of all underground pipes, tanks and bunds are not required to be completed until 3 years after the date of granting of the Licence (16<sup>th</sup> Dec 2011).

#### **4.8 Other reports required to be submitted in the AER**

The following reports are required to be included in the AER as outlined in Schedule D of the Licence:

##### **Waste Reduction - Prevention, Minimisation and Recycling Summary**

During 2009 the site completed a full review of its processes to identify opportunities for waste prevention, waste minimisation and waste recycling. This process has enabled the sites register of waste reduction opportunities to be updated and will provide focus for new reduction projects during 2010. The sites main focus in relation to hazardous waste reduction in 2009 involved a review of its DES waste classifications. A detailed drug contamination study of the DES manufacturing area was completed and has facilitated the reclassification of a high volume waste stream, allowing nearly 50 tonnes of waste previously classified as hazardous waste to be now disposed of as recycled non hazardous waste. The site has invested in upgrading non hazardous waste collection and segregation facilities on site. New standardised waste bins and signage have been introduced to further increase recycling on site. Recycling onsite has increased in 2009 by 2% to 71%. Initiatives to further reduce the amount of Hazardous waste have been identified for 2010, examples of same are included in EMP.

##### **Raw Material Usage and Efficiency**

The sites main focus for 2009 has been the completion of a site solvent mass balance and identifying projects to facilitate solvent reduction. A multi disciplinary team was setup on site and a senior manager appointed to champion this team. During the course of the year the team identified a number of potential solvent reduction opportunities for existing product lines and has also commenced dialogue with the companies product development department to examine opportunities for solvent reduction for future products. Key developments in 2009 include:

- Cleaning optimisation project work completed in 2009 has resulted in a reduction in the quantity of acetone used for cleaning parts in DES manufacturing.
- Further solvent reduction projects have been identified and are detailed in the sites 2010 EMP (Appendix C).

## **Minimisation of Water Demand and Trade Effluent**

2009 has been used to baseline the sites water usage and identify opportunities for reduction in 2010. This process has involved the installation of a number of additional water meters, with the data being used to determine normal water usage parameters for key water using utilities.

### **4.9 Other reports submitted to the EPA during 2009**

The following reports were submitted in full to the EPA during the year:

- Firewater Retention Study –The study concluded that there is adequate firewater retention capacity in place on site in the form of the surface water attenuation tanks. The main improvement measure required is to implement an isolation system on the surface water system by December 2010, to prevent surface water discharge from the site in the event of a fire.
- Hydrogeological Survey – The survey recommended that the onsite well be sampled and analysed for any contamination. In addition, the Agency has requested that the holy well be sampled and analysed, if possible. Sampling and analysis will be conducted in 2010.

# **APPENDIX A – AER Returns Worksheet**

# AER Returns Worksheet

<b>REFERENCE YEAR</b>	2009
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## 1. FACILITY IDENTIFICATION

Parent Company Name	Abbott Ireland Limited
Facility Name	Abbott Ireland Limited
PRTR Identification Number	P0847
Licence Number	P0847-01

Waste or IPPC Classes of Activity

No.	class_name
12.2.2	The manufacture or use of coating materials in processes with a capacity to make or use at least 10 tonnes per year of organic solvents, and powder coating manufacture with a capacity to produce at least 50 tonnes per year, not included in paragraph 12.2.
Address 1	Cashel Road
Address 2	Lawlesstown
Address 3	Clonmel
Address 4	County Tipperary
Country	Ireland
Coordinates of Location	-7.7226 52.3733
River Basin District	IESE
NACE Code	2561
Main Economic Activity	Treatment and coating of metals
<b>AER Returns Contact Name</b>	Mr. Nigel Hickey
<b>AER Returns Contact Email Address</b>	nigel.hickey@av.abbott.com
<b>AER Returns Contact Position</b>	Environmental Coordinator
<b>AER Returns Contact Telephone Number</b>	052-6173103
<b>AER Returns Contact Mobile Phone Number</b>	
<b>AER Returns Contact Fax Number</b>	
<b>Production Volume</b>	0.0
<b>Production Volume Units</b>	
<b>Number of Installations</b>	0
<b>Number of Operating Hours in Year</b>	0
<b>Number of Employees</b>	0
<b>User Feedback/Comments</b>	
<b>Web Address</b>	

## 2. PRTR CLASS ACTIVITIES

Activity Number	Activity Name
50.1	General

## 3. SOLVENTS REGULATIONS (S.I. No. 543 of 2002)

Is it applicable?	No
Have you been granted an exemption ?	
If applicable which activity class applies (as per Schedule 2 of the regulations) ?	
Is the reduction scheme compliance route being used ?	

4.1 RELEASES TO AIR

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

RELEASES TO AIR									
POLLUTANT		METHOD			QUANTITY				
No. Annex II	Name	M/C/E	Method Used		Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year	0.0
			Method Code	Designation or Des					
					0.0	0.0	0.0	0.0	0.0

\* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

SECTION B : REMAINING PRTR POLLUTANTS

RELEASES TO AIR										
POLLUTANT		METHOD			QUANTITY					
No. Annex II	Name	M/C/E	Method Used		Main Emission Pts (A2-1, A2-2, A2-7 and A2-8)	Minor Emission Pt/Scrubber (A3-11)	Boilers (A3-3, A3-4, A3-5) and CHP (A3-19)	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
			Method Code	Designation or Des						
07	Non-methane volatile organic compounds (NMVOC)	C	MAB and EN12619	SMP for fugitive levels. Main Emission Pts measured	1893.0	0.0	0.0	8543.0	0.0	6650.0
80	Chlorine and inorganic compounds (as HCl)	M	USEPA Method 26 (modified)		0.0	310.08	0.0	310.08	0.0	0.0
35	Dichloromethane (DCM)	C	MAB	SMP - Input less quantity in waste	0.0	0.0	0.0	51.0	0.0	51.0
02	Carbon monoxide (CO)	M	EN 15058		0.0	0.0	12540.0	12540.0	0.0	0.0
03	Carbon dioxide (CO2)	C	OTH	Using Bord Gais Conversion factor of 205.6 gCO2/kWh	0.0	0.0	2812250.05	2812250.05	0.0	0.0
08	Nitrogen oxides (NOx/NO2)	M	EN 14792		0.0	0.0	7584.6	7584.6	0.0	0.0
11	Sulphur oxides (SOx/SO2)	M	EN 14791		0.0	0.0	3635.19	3635.19	0.0	0.0
04	Hydro-fluorocarbons (HFCs)	M	OTH	Quantified when charging the chillers	0.0	0.0	0.0	361.0	361.0	0.0

\* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

SECTION C : REMAINING POLLUTANT EMISSIONS (As required in your Licence)

RELEASES TO AIR											
POLLUTANT		METHOD			QUANTITY						
Pollutant No.	Name	M/C/E	Method Used		A2-1	A2-2	A2-7	A2-8	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
			Method Code	Designation or Des	Emission Point 1	Emission Point 2	Emission Point 3	Emission Point 4			
351	Total Organic Carbon (as C)	M	EN 12619		127.9	898.0	56.5	63.75	1146.15	0.0	0.0
337	Pharmaceutical actives	M	EN 13284-1:2002		0.16	0.0	0.0	0.0	0.16	0.0	0.0

4.2 RELEASES TO WATERS

**SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS**

RELEASES TO WATERS					QUANTITY			
POLLUTANT		M/C/E	Method Used		Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
No. Annex II	Name		Method Code	Designation or Description				
					0.0	0.0	0.0	0.0

\* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

**SECTION B : REMAINING PRTR POLLUTANTS**

RELEASES TO WATERS					QUANTITY			
POLLUTANT		M/C/E	Method Used		Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
No. Annex II	Name		Method Code	Designation or Description				
					0.0	0.0	0.0	0.0

\* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

**SECTION C : REMAINING POLLUTANT EMISSIONS (as required in your Licence)**

RELEASES TO WATERS					QUANTITY			
POLLUTANT		M/C/E	Method Used		SW1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
Pollutant No.	Name		Method Code	Designation or Description	Emission Point 1			
306	COD	M	ALT	G/03 Based on APHA 2005, 21st Edition, 5220D, Closed Reflux, colourimetric method.	1410.0	1410.0	0.0	0.0

\* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button



4.3 RELEASES TO WASTEWATER OR SEWER

**SECTION A : PRTR POLLUTANTS**

OFFSITE TRANSFER OF POLLUTANTS DESTINED FOR WASTE-WATER TREATMENT OR SEWER								
POLLUTANT		METHOD			QUANTITY			
No. Annex	Name	M/C/E	Method Used		SE1	T (Total) KG/Year	A (Accidenta l) KG/Year	F (Fugitive) KG/Year
			Method Code	Designation or Description	Emission Point 1			
19	Chromium and compounds (as Cr)	M	USEPA 200.8		0.25	0.25	0.0	0.0
20	Copper and compounds (as Cu)	M	USEPA 200.8		0.19	0.19	0.0	0.0
24	Zinc and compounds (as Zn)	M	USEPA 200.8		0.24	0.24	0.0	0.0

\* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

**SECTION B : REMAINING POLLUTANT EMISSIONS (as required in your Licence)**

OFFSITE TRANSFER OF POLLUTANTS DESTINED FOR WASTE-WATER TREATMENT OR SEWER								
POLLUTANT		METHOD			QUANTITY			
Pollutant N	Name	M/C/E	Method Used		SE1	T (Total) KG/Year	A (Accidenta l) KG/Year	F (Fugitive) KG/Year
			Method Code	Designation or Description	Emission Point 1			
303	BOD	M	G/04 APHA 2005, Method 5210B		939.0	939.0	0.0	0.0
306	COD	M	G/03 APHA 2005 Method 5220D		3955.0	3955.0	0.0	0.0
314	Fats, Oils and Greases	M	G/32 APHA 2005 Method 5520B		53.0	53.0	0.0	0.0
330	Organic solvents	M	G/14 Based on ASTM Method D3695		106.0	106.0	0.0	0.0
332	Ortho-phosphate (as PO4)	M	G/67 APHA 2005, 4500-P.E.		28.3	28.3	0.0	0.0
343	Sulphate	M	G/67 Konelab		423.4	423.4	0.0	0.0
347	Total heavy metals	M	USEPA 200.8		1.9	1.9	0.0	0.0
240	Suspended Solids	M	G/19 APHA 2005, Method 2540B		1755.9	1755.9	0.0	0.0

\* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

## 5. ONSITE TREATMENT &amp; OFFSITE TRANSFERS OF WASTE

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	M/C/E	Method Used	Location of Treatment	Haz Waste : Name/ Licence/Permit No of Next Destination Facility <u>Non Haz Waste:</u> Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address of Next Destination Facility <u>Non Haz Waste:</u> <u>Address of Recover/Disposer</u>	Name and License / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)
To Other Countries	07 05 13	Yes	8.5	Solid Waste Potentially Contaminated with trace quantities of drug	D10	M	Weighed	Abroad	Indaver,W0036-02	Tolka Quay Road,Dublin Port,Dublin,D1,Ireland	Indaver NV,MLAVI/98000 00485,Poldervliet weg 5,Haven 550,Antwerp 3,BE-2030,Belgium	Poldervlietweg 5,Haven 550,Antwerp 3,BE-2030,Belgium
To Other Countries	07 05 13	Yes	88.48	Solid Waste Potentially Contaminated with trace quantities of drug	D10	M	Weighed	Abroad	Indaver,W0036-02	Tolka Quay Road,Dublin Port,Dublin,D1,Ireland	AVG,IB2234/AVG -GenB-2,BorsigstraBe 2,,Hamburg,22113,Germany	BorsigstraBe 2,, Hamburg,22113, Germany
To Other Countries	11 01 11	Yes	1.99	Neutralised Wetbench Waste	D10	M	Weighed	Abroad	Indaver,W0036-02	Tolka Quay Road,Dublin Port,Dublin,D1,Ireland	Indaver NV,MLAVI/98000 00485,Poldervliet weg 5,Haven 550,Antwerp 3,BE-2030,Belgium	Poldervlietweg 5,Haven 550,Antwerp 3,BE-2030,Belgium
To Other Countries	11 01 11	Yes	51.15	Neutralised Wetbench Waste	D10	M	Weighed	Abroad	Indaver,W0036-02	Tolka Quay Road,Dublin Port,Dublin,D1,Ireland	AVG,IB2234/AVG -GenB-2,BorsigstraBe 2,,Hamburg,22113,Germany	BorsigstraBe 2,, Hamburg,22113, Germany
To Other Countries	07 05 04	Yes	2.159	Drug Solvent Waste	D10	M	Weighed	Abroad	Indaver,W0036-02	Tolka Quay Road,Dublin Port,Dublin,D1,Ireland	AVG,IB2234/AVG -GenB-2,BorsigstraBe 2,,Hamburg,22113,Germany	BorsigstraBe 2,, Hamburg,22113, Germany
To Other Countries	07 05 04	Yes	31.8	Drug Solvent Waste	R2	M	Weighed	Abroad	Indaver,W0036-02	Tolka Quay Road,Dublin Port,Dublin,D1,Ireland	SRM Ltd.,BL7302ID,Middleton Road,Morecambe ,Lancashire,CA33 JW,United Kingdom	Middleton Road,Morecambe ,Lancashire,CA33 JW,United Kingdom

Annual Environmental Report 2009

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	M/C/E	Method Used	Location of Treatment	Haz Waste : Name/ Licence/Permit No of Next Destination Facility <u>Non Haz Waste:</u> Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address of Next Destination Facility <u>Non Haz Waste:</u> Address of Recover/Disposer	Name and License / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)
To Other Countries	15 02 02	Yes	5.83	Solid Waste contaminated with trace acids	D10	M	Weighed	Abroad	Indaver,W0036-02	Tolka Quay Road,Dublin Port,Dublin,D1,Ireland	Indaver NV,MLAVI/98000 00485,Poldervliet weg 5,Haven 550,Antwerp 3,BE-2030,Belgium	Poldervlietweg 5,Haven 550,Antwerp 3,BE-2030,Belgium
To Other Countries	15 02 02	Yes	32.64	Solid Waste contaminated with trace acids	D10	M	Weighed	Abroad	Indaver,W0036-02	Tolka Quay Road,Dublin Port,Dublin,D1,Ireland	AVG,IB2234/AVG -GenB-2,BorsigstraBe 2,,Hamburg,22113,Germany	BorsigstraBe 2,, Hamburg,22113, Germany
To Other Countries	15 02 02	Yes	6.79	Wipes Contaminated with IPA	D10	M	Weighed	Abroad	Indaver,W0036-02	Tolka Quay Road,Dublin Port,Dublin,D1,Ireland	AVG,IB2234/AVG -GenB-2,BorsigstraBe 2,,Hamburg,22113,Germany	BorsigstraBe 2,, Hamburg,22113, Germany
To Other Countries	15 02 02	Yes	1.18	Wipes Contaminated with IPA	D10	M	Weighed	Abroad	Indaver,W0036-02	Tolka Quay Road,Dublin Port,Dublin,D1,Ireland	Indaver NV,MLAVI/98000 00485,Poldervliet weg 5,Haven 550,Antwerp 3,BE-2030,Belgium	Poldervlietweg 5,Haven 550,Antwerp 3,BE-2030,Belgium
To Other Countries	15 02 02	Yes	1.16	Air Filters contaminated with drug	D10	M	Weighed	Abroad	Indaver,W0036-02	Tolka Quay Road,Dublin Port,Dublin,D1,Ireland	AVG,IB2234/AVG -GenB-2,BorsigstraBe 2,,Hamburg,22113,Germany	BorsigstraBe 2,, Hamburg,22113, Germany
To Other Countries	15 02 02	Yes	0.17	Air Filters contaminated with drug	D10	M	Weighed	Abroad	Indaver,W0036-02	Tolka Quay Road,Dublin Port,Dublin,D1,Ireland	Indaver NV,MLAVI/98000 00485,Poldervliet weg 5,Haven 550,Antwerp 3,BE-2030,Belgium	Poldervlietweg 5,Haven 550,Antwerp 3,BE-2030,Belgium
To Other Countries	06 01 06	Yes	10.37	611 Polishing Solution	D9	M	Weighed	Abroad	Indaver,W0036-02	Tolka Quay Road,Dublin Port,Dublin,D1,Ireland	Indaver NV,MLAVI/98000 00485,Poldervliet weg 5,Haven 550,Antwerp 3,BE-2030,Belgium	Poldervlietweg 5,Haven 550,Antwerp 3,BE-2030,Belgium

Annual Environmental Report 2009

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	M/C/E	Method Used	Location of Treatment	Haz Waste : Name/ Licence/Permit No of Next Destination Facility <u>Non Haz Waste:</u> Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address of Next Destination Facility <u>Non Haz Waste:</u> Address of Recover/Disposer	Name and License / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)
To Other Countries	06 01 06	Yes	6.18	Unneutralised Wetbench Waste	D10	M	Weighed	Abroad	Indaver,W0036-02	Tolka Quay Road,Dublin Port,Dublin,D1,Ireland	AVG,IB2234/AVG-GenB-2,BorsigstraBe 2,,Hamburg,22113,Germany	BorsigstraBe 2,, Hamburg,22113, Germany
To Other Countries	06 01 06	Yes	1.6	Unneutralised Wetbench Waste	D9	M	Weighed	Abroad	Indaver,W0036-021	Tolka Quay Road,Dublin Port,Dublin,D1,Ireland	Indaver NV,MLAVI/98000 00485,Poldervliet weg 5,Haven 550,Antwerp 3,BE-2030,Belgium	Poldervlietweg 5,Haven 550,Antwerp 3,BE-2030,Belgium
To Other Countries	07 05 04	Yes	5.82	Drug Solvent Waste	R3	M	Weighed	Abroad	Indaver,W0036-02	Tolka Quay Road,Dublin Port,Dublin,D1,Ireland	SRM Ltd.,BL7302ID,Middleton Road,Morecambe ,Lancashire,CA33 JW,United Kingdom	Middleton Road,Morecambe ,Lancashire,CA33 JW,United Kingdom
To Other Countries	15 01 10	Yes	11.29	Shredded glass containing solvent	D10	M	Weighed	Abroad	Indaver,W0036-02	Tolka Quay Road,Dublin Port,Dublin,D1,Ireland	AVG,IB2234/AVG-GenB-2,BorsigstraBe 2,,Hamburg,22113,Germany	BorsigstraBe 2,, Hamburg,22113, Germany
To Other Countries	15 01 10	Yes	1.61	Shredded glass containing solvent	D10	M	Weighed	Abroad	Indaver,W0036-02	Tolka Quay Road,Dublin Port,Dublin,D1,Ireland	Indaver NV,MLAVI/98000 00485,Poldervliet weg 5,Haven 550,Antwerp 3,BE-2030,Belgium	Poldervlietweg 5,Haven 550,Antwerp 3,BE-2030,Belgium
To Other Countries	15 01 10	Yes	7.75	Uncleaned bottles that contained orthophosphoric acid	D10	M	Weighed	Abroad	Indaver,W0036-02	Tolka Quay Road,Dublin Port,Dublin,D1,Ireland	AVG,IB2234/AVG-GenB-2,BorsigstraBe 2,,Hamburg,22113,Germany	BorsigstraBe 2,, Hamburg,22113, Germany
To Other Countries	15 01 10	Yes	4.66	Uncleaned bottles that contained orthophosphoric acid	D10	M	Weighed	Abroad	Indaver,W0036-02	Tolka Quay Road,Dublin Port,Dublin,D1,Ireland	Indaver NV,MLAVI/98000 00485,Poldervliet weg 5,Haven 550,Antwerp 3,BE-2030,Belgium	Poldervlietweg 5,Haven 550,Antwerp 3,BE-2030,Belgium

Annual Environmental Report 2009

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	M/C/E	Method Used	Location of Treatment	Haz Waste : Name/ Licence/Permit No of Next Destination Facility <u>Non Haz Waste:</u> Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address of Next Destination Facility <u>Non Haz Waste:</u> Address of Recover/Disposer	Name and License / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)
To Other Countries	15 01 10	Yes	0.825	Plastic bottles that previously contained E272	D10	M	Weighed	Abroad	Indaver,W0036-02	Tolka Quay Road,Dublin Port,Dublin,D1,Ireland	AVG,IB2234/AVG-GenB-2,BorsigstraBe 2,,Hamburg,22113,Germany	BorsigstraBe 2,, Hamburg,22113, Germany
To Other Countries	15 01 10	Yes	1.055	Plastic bottles that previously contained E272	D10	M	Weighed	Abroad	Indaver,W0036-02	Tolka Quay Road,Dublin Port,Dublin,D1,Ireland	Indaver NV,MLAVI/98000 00485,Poldervliet weg 5,Haven 550,Antwerp 3,BE-2030,Belgium	Poldervlietweg 5,Haven 550,Antwerp 3,BE-2030,Belgium
To Other Countries	11 01 06	Yes	3.52	E272 Vision	D10	M	Weighed	Abroad	Indaver,W0036-02	Tolka Quay Road,Dublin Port,Dublin,D1,Ireland	AVG,IB2234/AVG-GenB-2,BorsigstraBe 2,,Hamburg,22113,Germany	BorsigstraBe 2,, Hamburg,22113, Germany
To Other Countries	11 01 06	Yes	2.68	E272 Vision	D9	M	Weighed	Abroad	Indaver,W0036-02	Tolka Quay Road,Dublin Port,Dublin,D1,Ireland	Indaver NV,MLAVI/98000 00485,Poldervliet weg 5,Haven 550,Antwerp 3,BE-2030,Belgium	Poldervlietweg 5,Haven 550,Antwerp 3,BE-2030,Belgium
To Other Countries	06 01 01	Yes	0.33	Electroglo	D10	M	Weighed	Abroad	Indaver,W0036-02	Tolka Quay Road,Dublin Port,Dublin,D1,Ireland	AVG,IB2234/AVG-GenB-2,BorsigstraBe 2,,Hamburg,22113,Germany	BorsigstraBe 2,, Hamburg,22113, Germany
To Other Countries	06 01 05	Yes	0.83	Nitric Acid	D10	M	Weighed	Abroad	Indaver,W0036-02	Tolka Quay Road,Dublin Port,Dublin,D1,Ireland	AVG,IB2234/AVG-GenB-2,BorsigstraBe 2,,Hamburg,22113,Germany	BorsigstraBe 2,, Hamburg,22113, Germany
To Other Countries	17 09 03	Yes	3.46	Dismantled Wetbench Units	D10	M	Weighed	Abroad	Indaver,W0036-02	Tolka Quay Road,Dublin Port,Dublin,D1,Ireland	AVG,IB2234/AVG-GenB-2,BorsigstraBe 2,,Hamburg,22113,Germany	BorsigstraBe 2,, Hamburg,22113, Germany
Within the Country	20 01 35	Yes	1.75	WEEE (from dismantled wetbench units)	R13	M	Weighed	Offsite in Ireland	Indaver,W0036-02	Tolka Quay Road,Dublin Port,Dublin,D1,Ireland	Rehab/Gandon Enterprises Ltd.,WPR 0033/2,Broomhill	Broomhill Road Tallaght,Unit 77,Dublin,D24,Ireland

Annual Environmental Report 2009

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	M/C/E	Method Used	Location of Treatment	Haz Waste : Name/Licence/Permit No of Next Destination Facility <u>Non Haz Waste:</u> Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address of Next Destination Facility <u>Non Haz Waste:</u> Address of Recover/Disposer	Name and License / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)
											Road Tallaght, Unit 77, Dublin, D24, Ireland	
To Other Countries	16 05 08	Yes	0.32	Sporklenz	D10	M	Weighed	Abroad	Indaver, W0036-02	Tolka Quay Road, Dublin Port, Dublin, D1, Ireland	AVG, IB2234/AVG-GenB-2, BorsigstraBe 2, Hamburg, 22113, Germany	BorsigstraBe 2, Hamburg, 22113, Germany
To Other Countries	15 01 10	Yes	0.7	Glassware contaminated with Nitric Acid	D10	M	Weighed	Abroad	Indaver, W0036-02	Tolka Quay Road, Dublin Port, Dublin, D1, Ireland	AVG, IB2234/AVG-GenB-2, BorsigstraBe 2, Hamburg, 22113, Germany	BorsigstraBe 2, Hamburg, 22113, Germany
To Other Countries	15 01 10	Yes	0.04	Empty Vision Solution Overdrummed	D10	M	Weighed	Abroad	Indaver, W0036-02	Tolka Quay Road, Dublin Port, Dublin, D1, Ireland	AVG, IB2234/AVG-GenB-2, BorsigstraBe 2, Hamburg, 22113, Germany	BorsigstraBe 2, Hamburg, 22113, Germany
To Other Countries	15 01 10	Yes	0.08	Empty Solvent Containers	D10	M	Weighed	Abroad	Indaver, W0036-02	Tolka Quay Road, Dublin Port, Dublin, D1, Ireland	AVG, IB2234/AVG-GenB-2, BorsigstraBe 2, Hamburg, 22113, Germany	BorsigstraBe 2, Hamburg, 22113, Germany
Within the Country	15 01 10	Yes	0.03	Empty drum that previously contained Acti Chlor containing sodium hypochlorite. [BASIC]	R3	M	Weighed	Offsite in Ireland	Indaver, W0036-02	Tolka Quay Road, Dublin Port, Dublin, D1, Ireland	Rilta, W-0192-02, Block 402 Grants Drive, Greenogue Business Park, Rathcoole, Dublin, Ireland	Block 402 Grants Drive, Greenogue Business Park, Rathcoole, Dublin, Ireland
Within the Country	15 01 10	Yes	0.01	Empty drum that previously contained MB 215 (water treatment biocide). [ACIDIC]	R3	M	Weighed	Offsite in Ireland	Indaver, W0036-02	Tolka Quay Road, Dublin Port, Dublin, D1, Ireland	Rilta, W-0192-02, Block 402 Grants Drive, Greenogue Business Park, Rathcoole, Dublin, Ireland	Block 402 Grants Drive, Greenogue Business Park, Rathcoole, Dublin, Ireland
Within the Country	15 01 10	Yes	1.3	Empty drum that previously contained Sodium	R3	M	Weighed	Offsite in Ireland	Indaver, W0036-02	Tolka Quay Road, Dublin Port, Dublin, D1, Ireland	Rilta, W-0192-02, Block 402 Grants Drive, Greenogue	Block 402 Grants Drive, Greenogue Business Park, Rathcoole, D

Annual Environmental Report 2009

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	M/C/E	Method Used	Location of Treatment	Haz Waste : Name/ Licence/Permit No of Next Destination Facility <u>Non Haz Waste:</u> Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address of Next Destination Facility <u>Non Haz Waste:</u> Address of Recover/Disposer	Name and License / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)
				Hydroxide							Business Park,Rathcoole,Dublin,Ireland	ublin,Ireland
To Other Countries	15 01 10	Yes	0.135	Empty drum that previously contained Sodium Hydroxide	D10	M	Weighed	Abroad	Indaver,W0036-02	Tolka Quay Road,Dublin Port,Dublin,D1,Ireland	AVG,IB2234/AVG-GenB-2,BorsigstraBe 2,,Hamburg,22113,Germany	BorsigstraBe 2,,Hamburg,22113,Germany
To Other Countries	15 01 10	Yes	0.006	Empty drum that previously contained MB 215 (water treatment biocide). [ACIDIC]	D10	M	Weighed	Abroad	Indaver,W0036-02	Tolka Quay Road,Dublin Port,Dublin,D1,Ireland	AVG,IB2234/AVG-GenB-2,BorsigstraBe 2,,Hamburg,22113,Germany	BorsigstraBe 2,,Hamburg,22113,Germany
To Other Countries	15 01 10	Yes	0.014	Empty Unclean Drum previously containing Hydrochloric acid	D10	M	Weighed	Abroad	Indaver,W0036-02	Tolka Quay Road,Dublin Port,Dublin,D1,Ireland	AVG,IB2234/AVG-GenB-2,BorsigstraBe 2,,Hamburg,22113,Germany	BorsigstraBe 2,,Hamburg,22113,Germany
To Other Countries	06 01 06	Yes	18.85	611 Polishing Solution	D10	M	Weighed	Abroad	Indaver,W0036-02	Tolka Quay Road,Dublin Port,Dublin,D1,Ireland	AVG,IB2234/AVG-GenB-2,BorsigstraBe 2,,Hamburg,22113,Germany	BorsigstraBe 2,,Hamburg,22113,Germany
Within the Country	20 01 21	Yes	0.26	Flourescent Tubes	R13	M	Weighed	Offsite in Ireland	Irish Lamp Recycling,WFP-KE-08-0348-01	Woodstock Industrial Estate,Kilkenny Road,Athy ,Kildare,Ireland	Irish Lamp Recycling,WFP-KE-08-0348-01,Woodstock Industrial Estate,Kilkenny Road,Athy,Kildare, Ireland	Woodstock Industrial Estate,Kilkenny Road,Athy, Kildare,Ireland
Within the Country	13 05 07	Yes	1.0	Interceptor Waste (Oily Waste)	R9	C	Volume Calculation	Offsite in Ireland	ENVA Ireland Ltd,W0184-01	Clonminam Industrial Estate ,Portlaoise,Co. Laois,,Ireland	ENVA Ireland Ltd,W0184-01,Clonminam Industrial Estate ,Portlaoise,Co. Laois,,Ireland	Clonminam Industrial Estate ,Portlaoise,Co. Laois,,Ireland

Annual Environmental Report 2009

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	M/C/E	Method Used	Location of Treatment	Haz Waste : Name/ Licence/Permit No of Next Destination Facility <u>Non Haz Waste:</u> Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address of Next Destination Facility <u>Non Haz Waste:</u> Address of Recover/Disposer	Name and License / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)
Within the Country	20 03 01	No	107.26	General Municipal Waste	D1	M	Weighed	Offsite in Ireland	Mr. Binman,W0061-03	Luddenmore,Grange,Kilmallock,Limerick,Ireland		
Within the Country	20 03 01	No	57.45	General Municipal Waste	D1	M	Weighed	Offsite in Ireland	Greenstar,KK-08-0006-01	Unit 15/16,Hebron Industrial Estate,Hebron Road,Kilkenny,Ireland		
Within the Country	15 01 01	No	31.7	Cardboard	R13	M	Weighed	Offsite in Ireland	Mr. Binman,W0061-03	Luddenmore,Grange,Kilmallock,Limerick,Ireland		
Within the Country	15 01 01	No	28.59	Cardboard	R13	M	Weighed	Offsite in Ireland	Greenstar,KK-08-0006-01	Unit 15/16,Hebron Industrial Estate,Hebron Road,Kilkenny,Ireland		
Within the Country	20 01 38	No	19.61	Timber	R13	M	Weighed	Offsite in Ireland	Mr. Binman,W0061-03	Luddenmore,Grange,Kilmallock,Limerick,Ireland		
Within the Country	20 01 38	No	22.32	Timber	R13	M	Weighed	Offsite in Ireland	Greenstar,KK-08-0006-01	Unit 15/16,Hebron Industrial Estate,Hebron Road,Kilkenny,Ireland		
Within the Country	20 01 40	No	17.54	Metal	R4	M	Weighed	Offsite in Ireland	Mr. Binman,W0061-03	Luddenmore,Grange,Kilmallock,Limerick,Ireland		
Within the Country	20 01 40	No	11.91	Metal	R4	M	Weighed	Offsite in Ireland	Greenstar,KK-08-0006-01	Unit 15/16,Hebron Industrial Estate,Hebron Road,Kilkenny,Ireland		
Within the Country	20 01 40	No	1.074	Metal	R4	M	Weighed	Offsite in Ireland	Hegarty's Metals,WP 05-04	Ballysimon Road,,Limerick,,Ireland		



Annual Environmental Report 2009

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	M/C/E	Method Used	Location of Treatment	Haz Waste : Name/ Licence/Permit No of Next Destination Facility <u>Non Haz Waste:</u> Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address of Next Destination Facility <u>Non Haz Waste:</u> Address of Recover/Disposer	Name and License / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)
Within the Country	20 01 08	No	10.5	Food/Compost	R3	M	Weighed	Offsite in Ireland	Mr. Binman,W0061-03	Luddenmore,Grange,Kilmallock,Limerick,Ireland		
Within the Country	20 01 08	No	19.92	Food/Compost	R3	M	Weighed	Offsite in Ireland	Greenstar,KK-08-0006-01	Unit 15/16,Hebron Industrial Estate,Hebron Road,Kilkenny,Ireland		
Within the Country	15 01 02	No	5.3	Plastic	R13	M	Weighed	Offsite in Ireland	Mr. Binman,W0061-03	Luddenmore,Grange,Kilmallock,Limerick,Ireland		
Within the Country	15 01 02	No	2.93	Plastic	R13	M	Weighed	Offsite in Ireland	Greenstar,KK-08-0006-01	Unit 15/16,Hebron Industrial Estate,Hebron Road,Kilkenny,Ireland		
Within the Country	15 01 07	No	3.6	Glass	R13	M	Weighed	Offsite in Ireland	Mr. Binman,W0061-03	Luddenmore,Grange,Kilmallock,Limerick,Ireland		
Within the Country	15 01 06	No	35.8	Mixed packaging	R13	M	Weighed	Offsite in Ireland	Greenstar,KK-08-0006-01	Unit 15/16,Hebron Industrial Estate,Hebron Road,Kilkenny,Ireland		
Within the Country	20 03 07	No	15.6	Dry Mixed Waste - Commercial and Industrial	D1	M	Weighed	Offsite in Ireland	Greenstar,KK-08-0006-01	Unit 15/16,Hebron Industrial Estate,Hebron Road,Kilkenny,Ireland		
Within the Country	15 01 01	No	4.05	Paper	R13	M	Weighed	Offsite in Ireland	Greenstar,KK-08-0006-01	Unit 15/16,Hebron Industrial Estate,Hebron Road,Kilkenny,Ireland		

Annual Environmental Report 2009

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	M/C/E	Method Used	Location of Treatment	Haz Waste : Name/ Licence/Permit No of Next Destination Facility <b>Non Haz Waste: Name and Licence/Permit No of Recover/Disposer</b>	Haz Waste : Address of Next Destination Facility <b>Non Haz Waste: Address of Recover/Disposer</b>	Name and License / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)
Within the Country	15 01 01	No	36.94	Paper	R13	M	Weighed	Offsite in Ireland	Rehab Recycling,WP 03-07	Monahan Road,,Cork,,Ireland		
Within the Country	15 01 01	No	7.41	Paper	R13	M	Weighed	Offsite in Ireland	Shred-it,WFP-DC-09-0011-01	53 Park West Industrial Estate,,Dublin,D 12,Ireland		
Within the Country	20 01 36	No	1.38	Computers	R13	M	Weighed	Offsite in Ireland	Rehab Recycling,WP 03-07	Monahan Road,,Cork,,Ireland		
To Other Countries	20 01 25	No	1.83	Used Cooking Oil	R9	M	Weighed	Abroad	Sanders Products,EAW ML/50352	Foster Street,,Liverpool, L20 8EX,United Kingdom		
Within the Country	20 01 25	No	16.8	Grease from Grease Trap	R10	M	Weighed	Offsite in Ireland	Cremins Farm Compost,WP/LK/23(a)	Coolaleen,Broadford,Charleville,Limerick,Ireland		
Within the Country	08 03 18	No	1.77	Toner Cartridges	R13	M	Weighed	Offsite in Ireland	Source Imaging Supplies Ltd.,WP124/06	Unit 2,Banaher Enterprise Centre,Banaher, Co. Offaly,Ireland		

# APPENDIX B – EMP Report 2009

**EMP Report 2009, Page 1 of 3**

Objective	Targets & Objectives	Status	Update
<b>1. Air Emissions</b>	1.1.1 & 1.1.2 Identify and quantify site fugitive emissions.	Complete	Site fugitive emissions survey completed by ERM Consultants.
	1.1.3 & 1.1.4 Review available technologies and current best practices in relation to prevention and minimisation of fugitive emissions.	Complete	Benchmarked solvent management practices against sister site in California. A number of best practice documents were reviewed, eg, Cost-Effective Reduction of Fugitive Solvent Emissions (Environmental Technology Best Practice Programme, UK.)
	1.2.1 Complete a fugitive emissions assessment report to include recommendations for improvement for 2010.	Complete	Report completed by ERM. Recommendations included in 2010 EMP
	1.4 Ensure compliance with IPPC Fugitive emissions requirements and develop a management program for same.	Complete	IPPC Licence Fugitive emissions limit 20%, current site: 17.31%.
5 -Year Goal (2014)	Reduce absolute fugitive emissions by 5% (Versus 2009 baseline)	Ongoing	2009 baseline determined. First comparison to be made end of 2010.
Objective	Targets & Objectives	Status	Update
<b>2. Energy</b>	2.1 Install and commission Combined Heat and Power Unit.	Complete	Providing one third of electrical demand and 100% of heating demand.
	2.2 Optimise site chilled water system.	Complete	Chilled water energy usage reduced by 40%.
	2.3 Conduct site energy efficiency audit.	Complete	Completed.
5 -Year Goal (2013)	Reduce primary energy consumption rate (gas and elec) by 5%. (Normalised for Sales versus 2008 baseline.)	Complete	Reduced by > 5% both Normalised to Sales and absolute
Objective	Targets & Objectives	Status	Update
<b>3. Waste</b>	3.1.1 Investigate feasibility of decommissioning the Implants Scrubber Unit.	Ongoing	Investigation ongoing.
	3.1.2 Determine feasibility of treating Implants waste acid to avoid disposal via incineration.	Complete	Feasibility assessment complete, feasible to treat waste water on site.
	3.1.3 Complete DES drug contamination study to determine whether some waste streams can be re-classified as non-hazardous waste and recycled rather than incinerated.	Complete	An estimated 50 tonnes to be diverted per year from hazardous waste incineration to nonhaz recycle.
	3.1.4 Complete a site waste review to identify additional opportunities for waste reduction, reuse and/or recycling.	Complete	Site waste review completed.
	3.2.1 Prepare a site waste strategy and charter.	Complete	Strategy and charter prepared.
	3.3 Ensure 100% compliance with IPPC Waste Requirements.	Complete	100% compliant with IPPC waste requirements.
5-Year Goal (2013)	Reduce hazardous waste generation rate by 5%. (Normalised for Sales versus 2008 baseline)	Complete	Reduced by > 5% NTS*

<b>3. Waste (contd)</b>	Increase non-hazardous waste recycling rate to 85%. (Absolute)	Ongoing	Recycling increased by 2% to 71% in 2009, revised 5 year goal commencing 2010 included in 2010 EMP
	Reduce non-hazardous waste generation rate by 5% (2008 baseline, normalised for Sales)	Complete	Reduced by > 5% both Normalised to Sales and absolute.
<b>Objective</b>	<b>Targets &amp; Objectives</b>	<b>Status</b>	<b>Update</b>
<b>4. Raw Material Use</b>	4.1.1, 4.1.2, 4.1.3; Conduct a site solvent usage review and characterise usage onsite (quantity stored, annual usage, forecasted usage, process requirements, etc.). Identify solvent to be used be ongoing tracking. Develop system for tracking solvent usage.	Complete	Solvent usage tracked by sites Supply Chain Department.
	4.2.1 Conduct a benchmarking exercise to review solvent management practices in the medical device industry.	Complete	Benchmarked solvent management practices against sister site in California. A number of best practice documents were reviewed, eg, Cost-Effective Reduction of Fugitive Solvent Emissions (Environmental Technology Best Practice Programme, UK.)
	4.2.2, 4.2.3; For each solvent conduct an evaluation of options available for substitution, reuse and recovery and determine minimisation opportunities (solvent reduction program). Develop program of solvent usage optimisation.	Complete	Site solvent reduction team setup to identify and implement solvent reduction projects. Register of solvent reduction opportunities developed.
	4.3.1 Complete a solvent mass balance, to track and report on solvent usage on a quarterly basis.	Complete	Solvent being tracked through sites Supply Chain department.
	4.3.2, 4.4; Prepare Solvent Report for AER. Detail results of solvent reduction activities.	Complete	Solvent report completed.
	4.6 Ensure compliance with Solvent Regulations.	Complete	Compliant with solvent regulations.
5-Year Goal (2013)	Reduce Coating Solvent Consumption Rate by 5%. (Normalised for Sales versus 2008 baseline.)	Complete	Reduced by > 5% NTS*
<b>Objective</b>	<b>Targets &amp; Objectives</b>	<b>Status</b>	<b>Update</b>
<b>5. Water Usage Reduction &amp; Optimisation</b>	5.1.1 Install additional water meters and prepare a site water mass balance.	Ongoing	Project ongoing to Q1 2010
	5.1.2 Develop a standard operating procedure that outlines the arrangements in place for management of site water systems.	Complete	Internal SOP, SHE2067321.
	5.1.3, 5.1.4, 5.1.5; Conduct review of current best practices for water conservation to identify potential improvement projects, implement water efficiency program. Prepare report on site water use.	Ongoing	Project ongoing to Q1 2010
	5.4 Ensure compliance with IPPC water requirements.	Complete	Compliant with IPPC water requirements.
5-Year Goal (2013)	Reduce Water Consumption Rate by 5%. (Normalised for Sales versus 2008 baseline.)	Complete	Reduced by > 5% NTS*

Objective	Targets & Objectives	Status	Update
<b>6. Environmental Awareness</b>	6.1.1 Place IPPC Licence on sites document management system.	Complete	Internal doc, RPT2070505.
	6.1.2 Update training programs to include references to IPPC requirements.	Complete	First Day Induction and New Employee Orientation Programs revised.
	6.1.2.1, 6.1.3; Develop computer based training program to cover specific IPPC licence conditions and roll out to 100% of relevant staff.	Complete	CBT rolled out to all relevant staff.
	6.1.4 Arrange an environmental awareness week.	Complete	Awareness week run in September.
	6.2.1 Develop programme for the provision of environmental information to the public onsite.	Complete	Information file made available at reception.
	6.2.1.1 Erect environmental notice board adjacent to the site boundary, to provide required information to members of the public.	Complete	Sign erected at main entrance to site.
Objective	Targets & Objectives	Status	Update
<b>7. Improve Control of Key Environmental Suppliers &amp; Contractors</b>	7.1 Prepare a documented procedure to detail the arrangements in place for the approval and ongoing review of key environmental suppliers and contractors.	Complete	Internal SOP, SHE2070701.
	7.2 Update Key Environmental Suppliers & Contractors List and ensure all records of evaluation are maintained.	Complete	List updated and quarterly review to be started in 2010.
	7.3 Review any relevant Abbott or industry guidance on Green Procurement.	Complete	Have reviewed corporate and industry information.
	7.4 Ensure required Green Procurement adoption actions are included in the 2010 EMP.	Complete	Included in 2010 EMP

\*NTS = Normalised to Sales

# **APPENDIX C – 2010 EMP Proposal**

### ***Abbott Clonmel 2010 Environmental Management Programme***

Environmental Management Programme 2010 Overview:

In accordance with Condition 2.2.2.3 an Environmental Management Programme (EMP) proposal for 2010 for the site is presented below. The EMP includes Objectives and Targets prepared in accordance with Condition 2.2.2.3.

The EMP for the site has been prepared taking into account the significant environmental aspects identified during an evaluation exercise of each aspect conducted in accordance with ISO: 14001:2004. Specific IPPC Licence related requirements and specific site and/or Abbott Corporate related goals are also included.

The Aspects identified and evaluated are outlined as follows: -

- Aspect 1: Non-Hazardous Waste
- Aspect 2: Trade Effluent Emissions to Wastewater
- Aspect 3: Hazardous Waste
- Aspect 4: Supply Side Activities
- Aspect 5: Energy and Resource Usage
- Aspect 6: Emissions to Atmosphere
- Aspect 7: Hazardous Materials
- Aspect 8: Contractors Activities
- Aspect 9: Transport
- Aspect 10: Surface Water & Non Trade Effluents
- Aspect 11: Visual Impact
- Aspect 12: Environmental Noise
- Aspect 13: Potential Land Contamination

The objectives within the sites 2010 EMP were identified from the following:

- A review and re-rating of the sites environmental aspects to identify significant aspects.
- A review of any actions outstanding from the 2009 EMP.
- Identification of any IPPC related actions to be completed during 2010.
- Any other site and/or Abbott Corporate specific requirements.

The objectives and targets to be achieved within the EMP are outlined below and include the means and timeframe by which they will be achieved and responsibilities for implementation.

All the major environmental aspects on site have long-term programmes associated with them. These include Energy, Water Conservation and Waste Reduction. The 2010 EMP presents many of the shorter-term actions required to achieve continued improvement.



**O&T 1, Managerial Responsibility: Facilities & EHS Manager**

Objective & Targets 1	Aspect	Actions	Responsibility	Completion Date	Status
<b>Emissions to Air</b>  <b>5 Year (2014) Objective:</b> <b>Reduce Site Fugitive Emission Percentage</b>	Aspect 6:	3.1. Complete recommendations detailed in 2009 Fugitive Emissions Report (Ref. 0097219) completed by ERM Consulting, November 2009.	Environmental Coordinator	2010	<b>Open</b>
	Solvent Fugitive Emissions Reduction				
	Minor Emissions Monitoring	3.2 Complete solvent monitoring of IPPC minor discharge points on site.	Environmental Coordinator	2010	<b>Open</b>

**O&T 2, Managerial Responsibility: Facilities & EHS Manager**

Objective & Target 2	Aspect	Actions	Responsibility	Completion Date	Status
<b>Energy</b>  <b>5 Year Objective (2014):</b> <b>Reduce Site Primary Energy Consumption Rate (Normalised to Sales versus 2008 baseline.)</b>	Aspect 5: Energy Monitoring	4.1 Install new front end energy monitoring system.	Facilities Associate	2010.	<b>Open</b>
	AHU Air Change Reduction	4.2 Explore opportunities to optimise air changes per hour.	Validation Specialist	2010.	<b>Open</b>
	PC Off	4.3 Explore feasibility of installing software to automatically turn off PC's in production and offices.	IT Specialist, – Facilities Associate	2010.	<b>Open</b>
	Lighting	4.4 Upgrade on site lighting, where feasible (longer life tubes, etc.).	Facilities Associate	2010.	<b>Open</b>

**O&T 3, Managerial Responsibility: Facilities & EHS Manager**

Objective & Targets 3	Aspect	Targets	Responsibility	Completion Date	Status
<b>Waste Prevention, Reduction &amp; Recycling 5-Year (2013)</b> <b>Objective: Reduce the non hazardous waste production</b>	Aspect 1: Non-Hazardous Waste	1.1 Complete detailed review of recycling opportunities in DES, SDS and Implants.	Facilities Technician & Environmental Coordinator	2010.	Open
		1.2 From 1.1, identify and implement changes to increase waste recycling.	Facilities Technician & Environmental Coordinator	2010.	Open
<b>5-Year (2013)</b> <b>Objective: Increase Site Recycling Percentage to 80%.</b>					
<b>5-Year (2013)</b> <b>Objective: Reduce hazardous waste production rate</b>	Aspect 3: Hazardous Waste	1.3 Identify actions required to re-classify empty solvent bottles as non-hazardous waste.	Environmental Coordinator	2010.	Open
		1.4 Complete annual review of drug contamination levels in the DES Suite.	Environmental Coordinator	2010.	Open

**O&T 4, Managerial Responsibility: DES Engineering Manager**

Objective & Targets 4	Aspect	Actions	Responsibility	Completion Date	Status
<b>Resource Usage</b> <b>5 Year (2013)</b> <b>Objective: Reduce Coating Solvent Consumption Rate</b>	Solvent Substitution, Reuse & Recovery Options	5.1 Complete feasibility study into use of aqueous based dishwasher for cleaning parts (to replace solvent cleaning.)	DES Engineer	2010.	Open

**O&T 5, Managerial Responsibility: Facilities & EHS Manager**

Objective & Targets 5	Aspect	Actions	Responsibility	Completion Date	Status
<b>Water 5 Year (2014) Objective:</b>  <b>Reduce Site Water Consumption Rate</b>	Aspect 2 & 10:	6.1 Investigate feasibility of installing a more water efficient flushing mechanism for WC's.	Facilities Technician	2010.	<b>Open</b>
	Water Use Reduction & Optimisation	6.2 Complete evaluation of best practices for water conservation and identify improvement opportunities.	Facilities Technician	2010.	<b>Open</b>
	Surface Water	6.3 Installation of surface water discharge isolation system (Firewater Retention)	Facilities Technician	2010.	<b>Open</b>
		6.4 Complete groundwater monitoring as required under the sites Hydrogeological Survey.	Environmental Coordinator	2010.	<b>Open</b>

**O&T 6, Managerial Responsibility: Facilities & EHS Manager**

Objective & Targets 6	Aspect	Actions	Responsibility	Completion Date	Status
<b>Enhance Employee Environmental Awareness</b>	Multiple Aspects	8.1 Update Hazardous Communication CBT to include relevant references to IPPC Licence Requirements.	Environmental Coordinator	2010	<b>Open</b>
		8.2 Complete two ISO14001 Audit Awareness Training sessions for new supervisors.	Environmental Coordinator	2010	<b>Open</b>
		8.3 Prepare the 2009 Annual Environmental Report (AER) and submit to the EPA. Add AER to Viewpoint as a Report document.	Environmental Coordinator	2010	<b>Open</b>
		8.4 Prepare 'easy to read' summary version of AER and make available to managers and staff.	Environmental Coordinator	2010	<b>Open</b>
		8.5 Organise an onsite environmental awareness week for the Clonmel site with at least 3 specialist presenters.	Environmental Coordinator	2010	<b>Open</b>
		8.6 Agree and implement a full program of onsite activities to raise general environmental awareness on site (eg, poster campaigns, use of monitors, monthly communication slides, etc.)	Environmental Coordinator	2010	<b>Open</b>

**O&T 7, Managerial Responsibility: Supply Chain Manager**

Objective & Targets 7	Aspect	Actions	Responsibility	Completion Date	Status
<b>Supply Side Activities:</b> <b>Improve internal systems for approval and review of key environmental vendors.</b> <b>Minimise the Environmental Impact arising from the Purchase of Products and Services.</b>	Aspect 4: Supplier Management	2.1 Complete quarterly performance reviews of key environmental suppliers and contractors to the AV Clonmel site.	Senior Buyer	2010	<b>Open</b>
	Aspect 4: Green Procurement	2.2 Prepare a detailed Green Procurement Policy document for the Clonmel site and implement policy within the Supply Chain Department.	Senior Buyer	2010	<b>Open</b>