

EPA Application Form

7.4.2 - Emissions to Atmosphere - Minor and Potential Emissions - Attachment

Organisation Name:

AbbVie Ireland NL B.V.

Application I.D.:

LA001712

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Authorisation Application Form

Amendments to this Application Form Attachment

| Version No. | Date | Amendment since previous version | Reason |
|--------------------|-------------|---|------------------------------------|
| V.1.0 | July 2017 | N/A | Online application form attachment |
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EMISSIONS TO ATMOSPHERE

Emissions to air/atmosphere include the following:

Main Emissions

Main emissions include all emissions of environmental significance. Where a **mass emission threshold** is specified in a BAT document (BAT Conclusions, National BAT note or BREF), emissions which exceed this threshold prior to abatement are regarded as significant, i.e., 'main emissions'. (In some cases emissions below the threshold can still be significant and qualify as Main Emissions).

Minor Emissions

Emissions below the mass emission threshold may be considered minor emissions and therefore do not generally need to be specifically controlled by the conditions or schedules of the licence (i.e., setting of ELVs, abatement control measures, or monitoring requirements). Emissions may also be deemed minor by virtue of their source/nature (e.g., laboratory fume hoods, workspace extractions, passive vents from storage tanks, HVAC exhausts), or composition (e.g., water vapour emissions).

For combustion plant such as boilers, these can be considered minor where the rated thermal input is < 1MW where natural gas is the main fuel, and for liquid and solid fuels where its < 250kW.

Fugitive Emissions

Fugitive emissions include emissions from non-point sources and diffuse sources.

Potential Emissions

These are emissions which only operate under abnormal process conditions. Typical examples include bursting discs, pressure relief valves, and emergency generators. Bypasses and flares may also fall within this category, depending on how they are operated or designed to operate. Although the Agency does not normally set controls in licences for potential emissions, it may do so for the purposes of environmental protection.

This attachment collects information on main and fugitive emissions to atmosphere. Waste gas means the final gaseous emission from a stack or abatement equipment.

For main and fugitive emissions to atmosphere, complete the separate '*Emissions to Atmosphere - Main and Fugitive Emissions*' attachment.

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EMISSIONS TO ATMOSPHERE - Minor Emissions - one row per emission point

In completing this attachment for minor emissions, the applicant should supply sufficient information to justify the determination of the emission as minor. Notwithstanding the guidance provided on minor emissions, the Agency may consider any emission to be significant (i.e., a main emission) on the basis of environmental impact.

Complete the table below with summary details for all minor emission points to atmosphere.

| Emission Point Code ⁽¹⁾ | Easting ⁽²⁾ (Note 1) | Northing ⁽³⁾ (Note 1) | Description of source of emission(s) | Emission details ⁽⁴⁾ | | | Abatement system employed (if relevant) | |
|------------------------------------|------------------------------------|-------------------------------------|--------------------------------------|---------------------------------|-----------------------|----------------|---|---------------------|
| | | | | Parameter/ Material | mg/Nm ³⁽⁵⁾ | kg/h | | kg/year (Note 2) |
| A3-1 | 569751 | 837529 | A10 - Abbvie IM Extraction 75 | Formaldehyde TVOC | <1 <6 | 0.003 0.015 | 21 21 105 | Not required |
| A3-2 | 569746 | 837542 | A11 - Abbvie IM Extraction 76 | Formaldehyde TVOC | <1 <6 | 0.003 0.018 | 21 126 | Not required |
| A3-3 | 569827 | 837502 | Pad Printer Extract 1 | TVOC | <2 | 0.006 | 42 | Not required |
| A3-4 | 569825 | 837496 | Pad Printer Extract 2 | TVOC | <2 | 0.006 | 42 | Not required |
| A3-5 | 569824 | 837491 | Pad Printer Extract 3 | TVOC | <2 | 0.006 | 42 | Not required |
| A3-6 | 569818 | 837507 | Pad Printing Fume Cupboard | TVOC | <7 | 0.001 | 7 | Not required |

(1) The following convention should be observed when labelling minor atmospheric emission points:
A3-1, A3-2, A3-3,...etc.

(2) Six Digit GPS Irish National Grid Reference.

(3) Six Digit GPS Irish National Grid Reference.

(4) The maximum emission should be stated for each parameter emitted; the concentration should be based on the maximum 30 minute mean and must be the **PRE-ABATEMENT** level.

(5) Concentrations should be based on Normal conditions of temperature and pressure, (i.e. 0oC/101.3kPa). Wet/dry should be clearly stated. Include reference oxygen conditions for combustion sources.

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| Emission Point Code ⁽¹⁾ | Easting ⁽²⁾ (Note 1) | Northing ⁽³⁾ (Note 1) | Description of source of emission(s) | Emission details ⁽⁴⁾ | | | | Abatement system employed (if relevant) |
|------------------------------------|------------------------------------|-------------------------------------|--|---------------------------------|-----------------------|--------|---------------------|--|
| | | | | Parameter/ Material | mg/Nm ³⁽⁵⁾ | kg/h | kg/year (Note 2) | |
| A3-7 | 569825 | 837508 | Safety Kleen Unit | TVOC | <6 | 0.005 | 35 | Not required |
| A3-8 | 569822 | 837509 | Solvent Store Heat Recovery | TVOC | <10 | 0.001 | 7 | Not required |
| A3-9 (combined flue) | 569815 | 837593 | Low Pressure Hot Water Boiler Boiler is below the limit for MCP Calculations based on high fire Dry 0% excess oxygen | NOx | 40 | 0.0285 | 199.5 | Boilers are condensing and are highly efficient, no abatement system required. |
| A3-9 (combined flue) | 569815 | 837593 | Low Pressure Hot Water Boiler Boiler is below the limit for MCP Calculations based on high fire Dry 0% excess oxygen | NOx | 40 | 0.0285 | 199.5 | Boilers are condensing and are highly efficient, no abatement system required. |
| A3-9 (combined flue) | 569815 | 837593 | Low Pressure Hot Water Boiler Boiler is below the limit for MCP Calculations based on high fire Dry 0% excess oxygen | NOx | 40 | 0.0285 | 199.5 | Boilers are condensing and are highly efficient, no abatement system required. |
| A3-10 | 569838 | 837607 | Chiller Room Vent Exhaust | Exhaust air | N/A | N/A | N/A | HEPA Filters |
| A3-11 | 569780 | 837610 | Autoclave | Steam Vapour | N/A | N/A | N/A | Not Required |

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| Emission Point Code ⁽¹⁾ | Easting ⁽²⁾ (Note 1) | Northing ⁽³⁾ (Note 1) | Description of source of emission(s) | Emission details ⁽⁴⁾ | | | | Abatement system employed (if relevant) |
|------------------------------------|------------------------------------|-------------------------------------|---|--|-----------------------|--------|---------------------|---|
| | | | | Parameter/ Material | mg/Nm ³⁽⁵⁾ | kg/h | kg/year (Note 2) | |
| A3-12 | 569781 | 837610 | Autoclave | Steam Vapour | N/A | N/A | N/A | Not Required |
| A3-13 | 569781 | 837610 | Autoclave | Steam Vapour | N/A | N/A | N/A | Not Required |
| A3-14 | 569890 | 837602 | Nitrogen Bulk tank (Vent) | N ₂ gas | N/A | N/A | N/A | Not Required |
| A3-15 | 569781 | 837609 | Drain Vent | Vapours containing trace process chemicals | Trace | Trace | Trace | Not Required |
| A3-16 | 569756 | 837615 | Drain Vent | Vapours containing trace process chemicals | Trace | Trace | Trace | Not Required |
| A3-17 | 569755 | 837615 | Drain Vent | Vapours containing trace process chemicals | Trace | Trace | Trace | Not Required |
| A3-18 | 569765 | 837605 | Conjugation Isolator Exhaust | Air & dust particles & N ₂ | Trace | Trace | Trace | Dual HEPA Filters |
| A3-19 | 569765 | 837605 | Buffer Prep Fumehood Exhaust | Exhaust air (containing dust/powder particles from buffer formulation) | Trace | Trace | Trace | Not Required |
| A3-20 (combined flue) | 569818 | 837603 | LPHW Boiler #1 (Combined Flue) Dry 0% excess oxygen | NOx | 40 | 0.0205 | 143.5 | Not Required |
| A3-20 (combined flue) | 569818 | 837603 | LPHW Boiler #2 (Combined Flue) Dry 0% excess oxygen | NOx | 40 | 0.0205 | 143.5 | Not Required |

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| Emission Point Code ⁽¹⁾ | Easting ⁽²⁾ (Note 1) | Northing ⁽³⁾ (Note 1) | Description of source of emission(s) | Emission details ⁽⁴⁾ | | | | Abatement system employed (if relevant) |
|------------------------------------|------------------------------------|-------------------------------------|---|--|-----------------------|--------|---------------------|---|
| | | | | Parameter/ Material | mg/Nm ³⁽⁵⁾ | kg/h | kg/year (Note 2) | |
| A3-20 (combined flue) | 569818 | 837603 | LPHW Boiler #3 (Combined Flue) Dry 0% excess oxygen | NOx | 40 | 0.0205 | 143.5 | Not Required |
| A3-20 (combined flue) | 569818 | 837603 | LPHW Boiler #4 (Combined Flue) Dry 0% excess oxygen | NOx | 40 | 0.0205 | 143.5 | Not Required |
| A3-21 | 569817 | 837609 | Domestic Boiler Dry 0% excess oxygen | NOx | 36 | 0.0185 | 129.5 | Not Required |
| A3-22 | 569794 | 837607 | Drain Vent | Vapours containing trace process chemicals | trace | trace | trace | Not Required |
| A3-23 | 569791 | 837590 | Drain Vent | Vapours containing trace process chemicals | trace | trace | trace | Not Required |
| A3-24 | 569815 | 837583 | Drain Vent | Vapours containing trace process chemicals | trace | trace | trace | Not Required |
| A3-25 | 569799 | 837619 | High High strength Liquid waste tank | Vapours containing trace process chemicals (Trace particulate trace solvent DMA DMSO and CIP vapour) | trace | trace | trace | 2 um filter |

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| Emission Point Code ⁽¹⁾ | Easting ⁽²⁾ (Note 1) | Northing ⁽³⁾ (Note 1) | Description of source of emission(s) | Emission details ⁽⁴⁾ | | | | Abatement system employed (if relevant) |
|------------------------------------|------------------------------------|-------------------------------------|---|--|-----------------------|-------|---------------------|--|
| | | | | Parameter/ Material | mg/Nm ³⁽⁵⁾ | kg/h | kg/year (Note 2) | |
| A3-26 | 569798 | 837619 | High High strength bund Liquid waste tank | Vapours containing trace process chemicals (Trace particulate trace solvent DMA DMSO and CIP vapour) | trace | trace | trace | 2 um filter |
| A3-27 | 569791 | 837590 | VHP Safe Vap (Venting sterilising VHP, Peracetic acid vapour) | H ₂ O ₂ (HP) | trace | trace | trace | 2 catalytic Converters in series to convert any H2O2 to H ₂ O and O ₂ before venting |
| A3-28 | 569791 | 837589 | VHP Safe Vap (Venting sterilising VHP, Peracetic acid vapour) | H ₂ O ₂ (HP) | trace | trace | trace | 2 catalytic Converters in series to convert any H2O2 to H ₂ O and O ₂ before venting |
| A3-29 | 569801 | 837588 | VHP Safe Vap (Venting sterilising VHP, Peracetic acid vapour) | H ₂ O ₂ (HP) | trace | trace | trace | 2 catalytic Converters in series to convert any H2O2 to H ₂ O and O ₂ before venting |
| A3-30 | 569801 | 837588 | VHP Safe Vap (Venting sterilising VHP, Peracetic acid vapour) | H ₂ O ₂ (HP) | trace | trace | trace | 2 catalytic Converters in series to convert any H2O2 to H ₂ O and O ₂ before venting |
| A3-31 | 569815 | 837582 | VHP Safe Vap (Venting sterilising VHP, Peracetic acid vapour) | H ₂ O ₂ (HP) | trace | trace | trace | 2 catalytic Converters in series to convert any H2O2 to H ₂ O and O ₂ before venting |

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| Emission Point Code ⁽¹⁾ | Easting ⁽²⁾ (Note 1) | Northing ⁽³⁾ (Note 1) | Description of source of emission(s) | Emission details ⁽⁴⁾ | | | | Abatement system employed (if relevant) |
|------------------------------------|------------------------------------|-------------------------------------|--|---|-----------------------|-------|---------------------|---|
| | | | | Parameter/ Material | mg/Nm ³⁽⁵⁾ | kg/h | kg/year (Note 2) | |
| A3-32 | 569815 | 837584 | VHP Safe Vap (Venting sterilising VHP, Peracetic acid vapour) | H ₂ O ₂ (HP) | trace | trace | trace | 2 catalytic Converters in series to convert any H ₂ O ₂ to H ₂ O and O ₂ before venting |
| A3-33 | 569783 | 837601 | Formulation isolator | Exhaust Air | N/A | N/A | N/A | Dual HEPA Filters |
| A3-34 | 569814 | 837594 | Vial Filling machine | Water vapour & Air | trace | trace | trace | 2 um filtered |
| A3-35 | 569799 | 837597 | Vial Filling machine | Water vapour & Air | trace | trace | trace | 2 um filtered |
| A3-36 | 569839 | 837586 | RO Water Skid | Water vapour, H ₂ , O ₂ | trace | trace | trace | None |
| A3-37 | 569839 | 837586 | RO Water Skid | Water vapour, H ₂ , O ₂ | trace | trace | trace | None |
| A3-38 | 569839 | 837586 | RO Water Skid | Water vapour, H ₂ , O ₂ | trace | trace | trace | None |
| A3-39 | 569839 | 837586 | RO Water Skid | Water vapour, H ₂ , O ₂ | trace | trace | trace | None |
| A3-40 | 569838 | 837587 | Drain Vent | Vapours containing trace process chemicals | trace | trace | trace | None |
| A3-41 | 569838 | 837587 | Drain Vent | Vapours containing trace process chemicals | trace | trace | trace | None |
| A3-42 | 569817 | 537602 | Parts Washer Vent Water vapour / air (Product is not airborne during washing) | Exhaust air | N/A | N/A | N/A | None |
| A3-43 | 569817 | 837608 | Lyo (Slot door gasket vent) | Exhaust air | N/A | N/A | N/A | Not required |

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| Emission Point Code ⁽¹⁾ | Easting ⁽²⁾ (Note 1) | Northing ⁽³⁾ (Note 1) | Description of source of emission(s) | Emission details ⁽⁴⁾ | | | | Abatement system employed (if relevant) |
|------------------------------------|------------------------------------|-------------------------------------|--------------------------------------|--|-----------------------|-------|---------------------|---|
| | | | | Parameter/ Material | mg/Nm ³⁽⁵⁾ | kg/h | kg/year (Note 2) | |
| A3-44 | 569817 | 537608 | Lyo (Fluid expansion tank vent line) | N ₂ & Air & Syltherm heating oil vapour | trace | trace | trace | HEPA filters |
| A3-45 | 569817 | 837608 | Lyo (Vacuum generation) | Air | N/A | N/A | N/A | HEPA filters |
| A3-46 | 569815 | 837584 | Vent exhaust | Vapours containing trace process chemicals | trace | trace | trace | HEPA filters |
| A3-47 | 569755 | 837612 | Lab Autoclave | Steam Vapour | N/A | N/A | N/A | Not Required |
| A3-48 | 569755 | 837611 | Lab Decon Autoclave | Steam Vapour | N/A | N/A | N/A | Not Required |
| A3-49 | 569758 | 837604 | Laminar Flow Hood | Exhaust air (containing dust/powder particles used in lab scale testing) | trace | trace | trace | HEPA filters |
| A3-50 | 569759 | 837596 | Bio Safety Cabinet | Exhaust air (containing dust/powder particles or trace evaporated lab chemicals) | trace | trace | trace | HEPA filters |

*add rows to the table as necessary

Note: Map(s)/drawing(s) uploaded under 'Site Plans' in Tab 3 of the application form should identify the emission and monitoring points.

Note 1: Emission and monitoring point coordinates are in Irish Transverse Mercator (ITM) / UTM (Universal Transverse Mercator)

Note 2: Annual figures based on 7000 hours per year.



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EMISSIONS TO ATMOSPHERE – Potential Emissions to Atmosphere

Potential emissions are emissions that are not active under normal operation and would include by-passes or pressure relief valves.

Complete the table below with summary details of all potential emissions to atmosphere

| Emission Point Code ⁶ | Description of source of emission | Malfunction which could cause an emission | Emission details (Potential max. emissions) ⁽⁷⁾ | | |
|----------------------------------|-----------------------------------|--|---|---------------------|---------|
| | | | Parameter/Material | mg/Nm ³ | kg/hour |
| A4-1 | Chiller Room Emergency Exhaust | Local refrigerant alarms (r134a) | Air / r134a | Trace | Trace |
| A4-2 | Steam Generator PSV | Over pressure in boiler | Steam | N/A | N/A |
| A4-3 | Steam Generator PSV | Over pressure in boiler | Steam | N/A | N/A |
| A4-4 | Emergency Generator Flue | Power loss at facility | NOx, CO, HC, PM | 4000, 650, 150, 130 | N/A |
| A4-5 | Lyo - PSV (Refrigerant condenser) | Refrigerant expansion due to temperature change, over pressure of the refrigerant tank | Refrigerant | N/A | 643 |
| A4-6 | Bulk N ₂ PSV | Over pressure scenario on the Bulk tank or distribution lines | N ₂ Gas | N/A | N/A |
| A4-7 | Bulk N ₂ PSV | Over pressure scenario on the Bulk tank or distribution lines | N ₂ Gas | N/A | N/A |
| A4-8 | WFI still PSV | Over pressure in the WFI still | Steam / Air | N/A | N/A |

*add rows to the table as necessary

⁶ The following convention should be observed when labelling potential atmospheric emission points:
A4-1, A4-2, A4-3,...etc.

⁷ Estimate the potential maximum emission for each malfunction identified.