



**DATE OF REPORT:** 10<sup>TH</sup> DECEMBER 2018

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**TEST REPORT No. NOV18207.1**

**AIR EMISSION TESTING CONDUCTED  
ON CEMENT MILL EXHAUST STACKS 1,  
2 & 3 AT MORGAN CEMENT  
INTERNATIONAL IN PORT KEMBLA**

**DATE OF TESTING:** 20<sup>TH</sup> NOVEMBER 2018

**ACCREDITATION:**



This laboratory is accredited by the National Association of Testing Authorities (NATA).  
NATA Accredited Laboratory No. 15463.  
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## EXECUTIVE SUMMARY

AirLabs Environmental Pty Ltd was commissioned by Morgan Cement International Pty Ltd to monitor stack emissions from Mills 1, 2 & 3 Exhaust Stacks. All sampling was conducted by AirLabs Environmental on the 20<sup>th</sup> November 2018.

Analysis was undertaken by AirLabs Environmental and the National Measurement Institute (NMI) in accordance with our terms of NATA accreditation. Unless otherwise indicated, the methods cited in this report have been performed without deviation.

The following results comparison table shows that the concentrations of all analytes were below the limits set by the NSW DEHP (refer to Licence No. –12643, issued on 06<sup>th</sup> September 2016).

**Table 1:** Comparison of Test Results with NSW DEHP Limits

| Release Point | Parameter                             | Concentration (mg/m <sup>3</sup> ) | NSWEPA Concentration Limit (mg/m <sup>3</sup> ) |
|---------------|---------------------------------------|------------------------------------|---|
| Mill 1        | Total solid particles (TSP)           | 2.4                                | 20  |
|               | Fine particulates (PM <sub>10</sub> ) | 2.0                                | N/A   |
|               | Type 1 & 2 Substances                 | 0.016                              | 1.0   |
| Mill 2        | Total solid particles (TSP)           | 2.7                                | 20  |
|               | Fine particulates (PM <sub>10</sub> ) | 2.3                                | N/A   |
|               | Type 1 & 2 Substances                 | 0.022                              | 1.0   |
| Mill 3        | Total solid particles (TSP)           | 1.1                                | 20  |
|               | Fine particulates (PM <sub>10</sub> ) | 0.93                               | N/A   |
|               | Type 1 & 2 Substances                 | 0.025                              | 1.0   |

## INTRODUCTION

Airlabs Environmental Pty Ltd was commissioned by Morgan Cement International Pty Ltd to conduct air emissions monitoring of the exhaust ducts leaving Cement Mills 1, 2 and 3 for the following parameters:

- Gas velocity and volume flow rate
- Temperature
- Concentration of water vapour (moisture content)
- Concentration of oxygen and carbon dioxide
- Dry molecular weight & density of gases
- Concentration and mass emission rate of:
  - total solid particles
  - fine particulates (PM<sub>10</sub>).
  - type 1 & 2 substances.

All sampling was conducted on 20<sup>th</sup> November 2018.

## TEST METHODS

All sampling was undertaken by Airlabs Environmental. Airlabs Environmental is NATA accredited for all sampling undertaken for this project (NATA Accredited Laboratory No. 15463). Analysis was undertaken by Airlabs Environmental in accordance with our terms of accreditation. Specific details of the test methods used are available upon request.

**Table 2:** Summary of Test Methods

| Test Parameter                     | Test Method            | Method Detection Limit | Estimated Measurement Uncertainty | NATA Accredited |                |
|------------------------------------|------------------------|------------------------|-----------------------------------|-----------------|----------------|
|                                    |                        |                        |                                   | Sampling        | Analysis       |
| Sample plane criteria              | NSWEPA TM-1            | NA                     | NA                                | ✓               | NA             |
| Gas velocity                       | NSWEPA TM-2            | 3 m/s                  | ± 10%                             | ✓               | NA             |
| Temperature                        | NSWEPA TM-2            | 273K (0°C)             | ± 1%                              | ✓               | NA             |
| Moisture content                   | NSWEPA TM-22           | 0.2% v/v               | ± 5%                              | ✓               | ✓              |
| Oxygen & carbon dioxide            | NSWEPA TM-24 & TM-25   | 0.1% v/v               | ± 2%                              | ✓               | ✓              |
| Dry molecular weight & gas density | NSWEPA TM-23           | NA                     | ± 5%                              | ✓               | ✓              |
| Total solid particulates           | NSWEPA TM-15           | 0.5 mg/m <sup>3</sup>  | ± 15%                             | ✓               | ✓              |
| Fine Particulates                  | NSWEPA OM-5            | 0.5 mg/m <sup>3</sup>  | ± 15%                             | ✓               | ✓              |
| Type 1 & 2 Substances              | NSW EPA TM-12, 13 & 14 | 0.05 mg/m <sup>3</sup> | ± 17%                             | ✓               | ✓ <sup>1</sup> |

1. Type 1 & 2 Substances analyses were performed by NMI, with results included in their Report No. RN1216444.

## QUALITY STATEMENT

AirLabs Environmental is committed to providing the highest quality data to all our clients, as reflected in our ISO 17025 (NATA) accreditation. This requires strict adherence to and continuous improvement of all our processes and test work. Our goal is to exceed the QA/QC requirements as set by our clients and appropriate governmental entities and to ensure that all data generated is scientifically valid and defensible.

Airlabs Environmental is NATA accredited for all sampling undertaken for this project. Analysis was undertaken by the Airlabs Environmental in accordance with our terms of accreditation.

## SUITABILITY OF SAMPLING PLANE

The criteria for sampling planes as specified in AS4323.1-1995 'Stationary Source Emissions, Method 1: Selection of Sampling Provisions' states that, in the absence of cyclonic flow activity, ideal sampling plane conditions are found to exist at the positions given in Table 3 below:

**Table 3:** Criteria for the Selection of Sampling Planes

| Type of flow disturbance                              | Minimum distance upstream from disturbance, diameters (D) | Minimum distance downstream from disturbance, diameters (D) |
|---|---|---|
| Bend, connection, junction, direction change          | >2D   | >6D   |
| Louvre, butterfly damper (partially closed or closed) | >3D   | >6D   |
| Axial fan   | >3D   | >8D (see Note)  |
| Centrifugal fan                                       | >3D   | >6D   |

**NOTE:** The plane should be selected as far as practicable from a fan. Flow straighteners may be required to ensure the position chosen meets the check criteria listed in Items (a) to (f) below.

Section 4.1 of AS 4323.1-1995 (Ideal Sampling Positions) states that the location of the sampling plane shall be such that it meets the following criteria:

- The gas flow is basically in the same direction at all points along each sampling traverse.
- The gas velocity at all sampling points is greater than 3 m/s.
- The gas flow profile at the sampling plane shall be steady, evenly distributed and not have a cyclonic component which exceeds an angle of 15° to the duct axis, when measured near the periphery of a circular sampling plane.
- The temperature difference between adjacent points of the survey along each sampling traverse is less than 10% of the absolute temperature, and the temperature at any point differs by less than 10% from the mean.
- The ratio of the highest to lowest pitot pressure difference shall not exceed 9:1 and the ratio of highest to lowest gas velocities shall not exceed 3:1. For isokinetic testing with the use of impingers, the gas velocity ratio across the sampling plane should not exceed 1.6:1.
- The gas temperature at the sampling plane should preferably be above the dewpoint.

## SUITABILITY OF SAMPLING PLANE Continued

When the criteria in Table 3 cannot be met, a greater number of sampling points is used in order to retain as much accuracy as is practicable, as outlined in Section 4.2 of AS 4323.1-1995 (Non-Ideal Sampling Positions). The sampling plane details and required number of sampling points for Cement Mills 1, 2 and 3 are given in Tables 4, 5 and 6 below:

**Table 4:** Sampling Plane Details for the Cement Mill 1 Exhaust Duct

| Parameter                                     |                  |
|---|------------------|
| Stack Shape                                   | Circular         |
| Actual Stack Internal Diameter (m)            | 0.850            |
| Direction of Air Flow                         | Vertical         |
| Type of Disturbance, Upstream                 | Bend             |
| Distance from Upstream Disturbance            | 4 D (< 6D)       |
| Type of Disturbance, Downstream               | Butterfly damper |
| Distance to Downstream Disturbance            | 1 D (< 3D)       |
| Compliance with AS 4323.1, Ideal Conditions   | No               |
| Standard No. of Sampling Points per Traverse  | 6                |
| Number of Traverses                           | 2                |
| Correction Factor                             | 1.265            |
| Corrected No. of Sampling Points per Traverse | 8                |
| Total No. of Sampling Points                  | 16               |
| Stratified                                    | No               |
| Cyclonic                                      | No (< 15°)       |
| Velocity Difference                           | 1.2:1 (< 1.6:1)  |
| Absolute Temperature Difference (K)           | < 10%            |
| Minimum Velocity at any Sample Point (m/s)    | > 3              |

**Figure 1:** Cement Mill 1 Exhaust Duct



**Table 5:** Sampling Plane Details for the Cement Mill 2 Exhaust Duct

| Parameter                                     |                  |
|---|------------------|
| Stack Shape                                   | Circular         |
| Actual Stack Internal Diameter (m)            | 0.850            |
| Direction of Air Flow                         | Vertical         |
| Type of Disturbance, Upstream                 | Bend             |
| Distance from Upstream Disturbance            | 4 D (< 6D)       |
| Type of Disturbance, Downstream               | Butterfly damper |
| Distance to Downstream Disturbance            | 1 D (< 3D)       |
| Compliance with AS 4323.1, Ideal Conditions   | No               |
| Standard No. of Sampling Points per Traverse  | 6                |
| Number of Traverses                           | 2                |
| Correction Factor                             | 1.265            |
| Corrected No. of Sampling Points per Traverse | 8                |
| Total No. of Sampling Points                  | 16               |
| Stratified                                    | No               |
| Cyclonic                                      | No (< 15°)       |
| Velocity Difference                           | 1.3:1 (< 1.6:1)  |
| Absolute Temperature Difference (K)           | < 10%            |
| Minimum Velocity at any Sample Point (m/s)    | > 3              |

**Figure 2:** Cement Mill 2 Exhaust Duct





## SUITABILITY OF SAMPLING PLANE Continued

**Table 6:** Sampling Plane Details for the Cement Mill 3 Exhaust Duct

| Parameter                                     |                 |
|---|-----------------|
| Stack Shape                                   | Rectangular     |
| Actual Duct Internal Diameter (m)             | 1.77 * 0.800    |
| Direction of Discharge to Air                 | Horizontal      |
| Type of Disturbance, Upstream                 | Centrifugal Fan |
| Distance from Upstream Disturbance            | 3.4D (< 6 D)    |
| Type of Disturbance, Downstream               | Duct Exit       |
| Distance to Downstream Disturbance            | 4.9D (> 2 D)    |
| Compliance with AS 4323.1, Ideal Conditions   | No              |
| Standard No. of Sampling Points per Traverse  | 2               |
| Number of Traverses                           | 3               |
| Correction Factor                             | 1.15            |
| Corrected No. of Sampling Points per Traverse | 3               |
| Total No. of Sampling Points                  | 9               |
| Stratified                                    | No              |
| Cyclonic                                      | No (< 15°)      |
| Velocity Difference                           | 1.1:1 (< 1.6:1) |
| Absolute Temperature Difference (K)           | < 10%           |
| Minimum Velocity at any Sample Point (m/s)    | > 3             |

**Figure 3:** Cement Mill 3 Exhaust Duct



## DEFINITIONS

- 'NSWEPA' New South Wales Environment Protection Authority.
- 'USEPA' United States Environmental Protection Agency.
- 'NA' Not applicable.
- 'Am<sup>3</sup>' Actual gas volume at stack conditions.
- 'STP' Standard temperature and pressure (0°C and 101.3 kPa).
- '% v/v' Percent, volumetric basis.
- 'm<sup>3</sup>' Normalised gas volume in dry cubic metres at STP.
- 'mg/m<sup>3</sup>' Milligrams (10<sup>-3</sup> grams) of substance per dry cubic meter of gas at STP.
- 'g/sec' Grams of substance discharged per second.

## RESULTS

|                          |   |
|--------------------------|---|
| <b>Company</b>           | Morgan Cement International Pty Ltd         |
| <b>Site</b>              | Foreshore Rd, Port Kembla                   |
| <b>Date of Test</b>      | 20 <sup>th</sup> November 2018              |
| <b>Source Tested</b>     | Cement Mill 1 Exhaust Duct – EPA ID No.4    |
| <b>Sampling Period</b>   | 08:18 – 11:01                               |
| <b>Testing Officers</b>  | I Brash & A. Aitharaju                      |
| <b>Sampling Position</b> | Two 110 mm flanges in a circular metal duct |

**Table 7:** Sampling Conditions for the Cement Mill 1 Exhaust Duct on 20<sup>th</sup> November 2018

| Sampling Conditions                                     |            |
|---|------------|
| Duct dimensions at sampling plane (m)                   | 0.850      |
| Average gas temperature (K)                             | 343 (70°C) |
| Average gas velocity (m/s)                              | 15.9       |
| Actual gas flow rate (Am <sup>3</sup> /sec)             | 9.03       |
| Average moisture content (%v/v)                         | 0.44       |
| Barometric pressure (mB)                                | 1008.0     |
| Static pressure (mB)                                    | -23.5      |
| Stack pressure (mB)                                     | 984.5      |
| Average gas flow rate at STP, dry (m <sup>3</sup> /sec) | 7.16       |
| Average oxygen concentration (%v/v)                     | 20.9       |
| Average carbon dioxide concentration (%v/v)             | 0.050      |
| Dry gas density of stack gas (kg/m <sup>3</sup> )       | 1.287      |
| Dry molecular weight of stack gas (g/g mole)            | 28.85      |
| Wet molecular weight of stack gas (g/g mole)            | 28.80      |

**Table 8:** Test Results for Cement Mill 1 Exhaust Duct on 20<sup>th</sup> November 2018

| Parameter                             | Concentration (mg/m <sup>3</sup> ) | NSWEPA Limit (mg/m <sup>3</sup> ) | Emission Rate (g/sec) |
|---------------------------------------|------------------------------------|-----------------------------------|-----------------------|
| Total solid particles (TSP)           | 2.4                                | 20                                | 0.017                 |
| Fine particulates (PM <sub>10</sub> ) | 2.0                                | N/A                               | 0.014                 |
| Type 1 & 2 substances <sup>□</sup>    | 0.016                              | 1.0                               | 0.00011               |

<sup>□</sup> Type 1 & 2 substances include As, Be, Cd, Cr, Co, Hg, Mn, Ni, Pb, Sb, Se, Sn, V & their compounds (refer to Table 9 & 10).



RESULTS – Continued

**Table 9:** Concentration of Type 1 Substances and their Compounds - 20<sup>th</sup> November 2018

| <b>Metal/Metal Compound</b>                          | <b>Concentration (mg/Nm<sup>3</sup>)</b> | <b>Emission Rate (g/sec)</b> |
|--|--|------------------------------|
| Antimony (Sb) & its compounds                        | <0.0002                                  | <0.000001                    |
| Arsenic (As) & its compounds                         | <0.0002                                  | <0.000001                    |
| Cadmium (Cd) & its compounds                         | 0.000033                                 | 0.00000024                   |
| Lead (Pb) & its compounds                            | 0.0018                                   | 0.000013                     |
| Mercury (Hg) & its compounds                         | 0.000015                                 | 0.00000011                   |
| <b>Total Type 1 substances &amp; their compounds</b> | <b>0.0018</b>                            | <b>0.000013</b>              |

**Table 10:** Concentration of Type 2 Substances and their Compounds - 20<sup>th</sup> November 2018

| <b>Metal/Metal Compound</b>                          | <b>Concentration (mg/Nm<sup>3</sup>)</b> | <b>Emission Rate (g/sec)</b> |
|--|--|------------------------------|
| Beryllium (Be) & its compounds                       | <0.0002                                  | <0.000001                    |
| Chromium (Cr) & its compounds                        | 0.0019                                   | 0.000014                     |
| Cobalt (Co) & its compounds                          | <0.0002                                  | <0.000001                    |
| Manganese (Mn) & its compounds                       | 0.0048                                   | 0.000035                     |
| Nickel (Ni) & its compounds                          | 0.0065                                   | 0.000047                     |
| Selenium (Se) & its compounds                        | 0.00025                                  | 0.0000018                    |
| Tin (Sn) & its compounds                             | <0.0002                                  | <0.000001                    |
| Vanadium (V) & its compounds                         | 0.00013                                  | 0.00000095                   |
| <b>Total Type 2 substances &amp; their compounds</b> | <b>0.014</b>                             | <b>0.000097</b>              |

## RESULTS Continued

|                          |   |
|--------------------------|---|
| <b>Company</b>           | Morgan Cement International Pty Ltd         |
| <b>Site</b>              | Foreshore Rd, Port Kembla                   |
| <b>Date of Test</b>      | 20 <sup>th</sup> November 2018              |
| <b>Source Tested</b>     | Cement Mill 2 Exhaust Duct – EPA ID No.2    |
| <b>Sampling Period</b>   | 11:37 – 14:19                               |
| <b>Testing Officers</b>  | I Brash & A. Aitharaju                      |
| <b>Sampling Position</b> | Two 110 mm flanges in a circular metal duct |

**Table 11:** Sampling Conditions for the Cement Mill 2 Exhaust Duct on 20<sup>th</sup> November 2018

| Sampling Conditions                                     |            |
|---|------------|
| Duct dimensions at sampling plane (m)                   | 0.850      |
| Average gas temperature (K)                             | 349 (76°C) |
| Average gas velocity (m/s)                              | 13.1       |
| Actual gas flow rate (Am <sup>3</sup> /sec)             | 7.44       |
| Average moisture content (%v/v)                         | 0.70       |
| Barometric pressure (mB)                                | 1005.7     |
| Static pressure (mB)                                    | - 11.9     |
| Stack pressure (mB)                                     | 993.8      |
| Average gas flow rate at STP, dry (m <sup>3</sup> /sec) | 5.78       |
| Average oxygen concentration (%v/v)                     | 20.9       |
| Average carbon dioxide concentration (%v/v)             | 0.055      |
| Dry gas density of stack gas (kg/m <sup>3</sup> )       | 1.287      |
| Dry molecular weight of stack gas (g/g mole)            | 28.85      |
| Wet molecular weight of stack gas (g/g mole)            | 28.78      |

**Table 12:** Test Results for the Cement Mill 2 Exhaust Duct on 20<sup>th</sup> November 2018

| Parameter                          | Concentration (mg/m <sup>3</sup> ) | NSWEPA Limit (mg/m <sup>3</sup> ) | Emission Rate (g/sec) |
|------------------------------------|------------------------------------|-----------------------------------|-----------------------|
| Total solid particles (TSP)        | 2.7                                | 20                                | 0.016                 |
| Fine particulates (PM10)           | 2.3                                | N/A                               | 0.013                 |
| Type 1 & 2 substances <sup>b</sup> | 0.022                              | 1.0                               | 0.00012               |

<sup>b</sup> Type 1 & 2 substances include As, Be, Cd, Cr, Co, Hg, Mn, Ni, Pb, Sb, Se, Sn, V & their compounds (refer to Table 13 & 14).

RESULTS – Continued

**Table 13:** Concentration of Type 1 Substances and their Compounds - 20<sup>th</sup> November 2018

| Metal/Metal Compound                                 | Concentration (mg/Nm <sup>3</sup> ) | Emission Rate (g/sec) |
|--|-------------------------------------|-----------------------|
| Antimony (Sb) & its compounds                        | <0.0001                             | <0.0000008            |
| Arsenic (As) & its compounds                         | <0.0001                             | <0.0000008            |
| Cadmium (Cd) & its compounds                         | 0.000028                            | 0.00000016            |
| Lead (Pb) & its compounds                            | 0.0019                              | 0.000011              |
| Mercury (Hg) & its compounds                         | 0.000012                            | 0.000000069           |
| <b>Total Type 1 substances &amp; their compounds</b> | <b>0.0019</b>                       | <b>0.000011</b>       |

**Table 14:** Concentration of Type 2 Substances and their Compounds - 20<sup>th</sup> November 2018

| Metal/Metal Compound                                 | Concentration (mg/Nm <sup>3</sup> ) | Emission Rate (g/sec) |
|--|-------------------------------------|-----------------------|
| Beryllium (Be) & its compounds                       | <0.0001                             | <0.0000008            |
| Chromium (Cr) & its compounds                        | 0.0019                              | 0.000011              |
| Cobalt (Co) & its compounds                          | <0.0001                             | <0.0000008            |
| Manganese (Mn) & its compounds                       | 0.015                               | 0.000089              |
| Nickel (Ni) & its compounds                          | 0.0024                              | 0.000014              |
| Selenium (Se) & its compounds                        | 0.00018                             | 0.0000010             |
| Tin (Sn) & its compounds                             | <0.0001                             | <0.0000008            |
| Vanadium (V) & its compounds                         | 0.00017                             | 0.00000098            |
| <b>Total Type 2 substances &amp; their compounds</b> | <b>0.020</b>                        | <b>0.00031</b>        |

## RESULTS Continued

|                          |  |
|--------------------------|--|
| <b>Company</b>           | Morgan Cement International Pty Ltd          |
| <b>Site</b>              | Foreshore Rd, Port Kembla                    |
| <b>Date of Test</b>      | 20 <sup>th</sup> November 2018               |
| <b>Source Tested</b>     | Cement Mill 3 Exhaust Duct – EPA ID No.3     |
| <b>Sampling Period</b>   | 14:38 – 17:02                                |
| <b>Testing Officers</b>  | I Brash & A. Aitharaju                       |
| <b>Sampling Position</b> | Three 4” sockets in a rectangular metal duct |

**Table 15:** Sampling Conditions for the Cement Mill 3 Exhaust Duct on 20<sup>th</sup> November 2018

| Sampling Conditions                                     |              |
|---|--------------|
| Duct dimensions at sampling plane (m)                   | 1.77 x 0.800 |
| Average stack gas temperature (K)                       | 351 (78°C)   |
| Average gas velocity (m/s)                              | 20.8         |
| Actual gas flow rate (Am <sup>3</sup> /sec)             | 29.5         |
| Average moisture content (%v/v)                         | 1.03         |
| Barometric pressure (mB)                                | 1003.2       |
| Static pressure (mB)                                    | 1.9          |
| Stack pressure (mB)                                     | 1005.1       |
| Average gas flow rate at STP, dry (m <sup>3</sup> /sec) | 22.7         |
| Average oxygen concentration (%v/v)                     | 20.9         |
| Average carbon dioxide concentration (%v/v)             | 0.055        |
| Dry gas density of stack gas (kg/m <sup>3</sup> )       | 1.287        |
| Dry molecular weight of stack gas (g/g mole)            | 28.85        |
| Wet molecular weight of stack gas (g/g mole)            | 28.74        |

**Table 16:** Test Results for the Cement Mill 3 Exhaust Duct on 20<sup>th</sup> November 2018

| Parameter                          | Concentration (mg/m <sup>3</sup> ) | NSWEPA Limit (mg/m <sup>3</sup> ) | Emission Rate (g/sec) |
|------------------------------------|------------------------------------|-----------------------------------|-----------------------|
| Total solid particles (TSP)        | 1.1                                | 20                                | 0.025                 |
| Fine particulates (PM10)           | 0.93                               | N/A                               | 0.021                 |
| Type 1 & 2 substances <sup>c</sup> | 0.025                              | 1.0                               | 0.00056               |

<sup>c</sup> Type 1 & 2 substances include As, Be, Cd, Cr, Co, Hg, Mn, Ni, Pb, Sb, Se, Sn, V & their compounds (refer to Table 17 & 18).

RESULTS – Continued

**Table 17:** Concentration of Type 1 Substances and their Compounds - 20<sup>th</sup> November 2018

| Metal/Metal Compound                                 | Concentration (mg/Nm <sup>3</sup> ) | Emission Rate (g/sec) |
|--|-------------------------------------|-----------------------|
| Antimony (Sb) & its compounds                        | <0.0001                             | <0.000003             |
| Arsenic (As) & its compounds                         | <0.0001                             | <0.00003              |
| Cadmium (Cd) & its compounds                         | 0.000016                            | 0.00000037            |
| Lead (Pb) & its compounds                            | 0.00075                             | 0.000017              |
| Mercury (Hg) & its compounds                         | 0.000014                            | 0.00000032            |
| <b>Total Type 1 substances &amp; their compounds</b> | <b>0.00078</b>                      | <b>0.000018</b>       |

**Table 18:** Concentration of Type 2 Substances and their Compounds - 20<sup>th</sup> November 2018

| Metal/Metal Compound                                 | Concentration (mg/Nm <sup>3</sup> ) | Emission Rate (g/sec) |
|--|-------------------------------------|-----------------------|
| Beryllium (Be) & its compounds                       | <0.0001                             | <0.000003             |
| Chromium (Cr) & its compounds                        | 0.00094                             | 0.000021              |
| Cobalt (Co) & its compounds                          | <0.0001                             | <0.000003             |
| Manganese (Mn) & its compounds                       | 0.022                               | 0.00050               |
| Nickel (Ni) & its compounds                          | 0.00094                             | 0.000021              |
| Selenium (Se) & its compounds                        | <0.0001                             | <0.000003             |
| Tin (Sn) & its compounds                             | <0.0001                             | <0.000003             |
| Vanadium (V) & its compounds                         | <0.0001                             | <0.000003             |
| <b>Total Type 2 substances &amp; their compounds</b> | <b>0.024</b>                        | <b>0.00054</b>        |