# Environmental Benchmarks Scotland – Air

Last updated: March 2024

## Air Quality Standards

| **Substance** | **Long Term concentration (µg/m3)** | **Short Term concentration (µg/m3)** | **Derivation method or information source** |
| --- | --- | --- | --- |
| 1,3 Butadiene | 2.25 |  | UK Air Quality Strategy Objectives |
| Arsenic and compounds (as As) | 0.006 |  | The Air Quality Standards (Scotland) Regulations 2010 |
| Benzene (24h mean) | 3.25 | 30 | LT: The Air Quality (Scotland) Amendment Regulations 2002/ST: HSE EH40 (2001) |
| Benzo-a-pyrene (PAH) | 0.00025 |  | The Air Quality Standards (Scotland) Regulations 2010 |
| Cadmium and its compounds (as Cd) | 0.005 |  | The Air Quality Standards (Scotland) Regulations 2010 |
| Carbon monoxide (8h mean) |  | 10000 | The Air Quality Standards (Scotland) Regulations 2010 |
| Lead | 0.25 |  | The Air Quality (Scotland) Regulations 2000. |
| Nickel | 0.02 |  | The Air Quality Standards (Scotland) Regulations 2010 |
| Nitrogen Dioxide | 40 | 200 | The Air Quality Standards (Scotland) Regulations 2010 |
| Ozone (Running 8 Hour Mean) |  | 100 | The Air Quality Standards (Scotland) Regulations 2010 |
| Particulates (PM10) (24 hr Mean) |  | 50 | The Air Quality Standards (Scotland) Regulations 2010 |
| Particulates (PM10) | 18 |  | The Air Quality (Scotland) Amendment Regulations 2002 |
| Particulates (PM2.5) | 10 |  | The Air Quality (Scotland) Amendment Regulations 2016 |
| Sulphur Dioxide (15 Min Mean) |  | 266 | The Air Quality Standards (Scotland) Regulations 2010 |
| Sulphur Dioxide (24 Hour Mean) |  | 125 | The Air Quality Standards (Scotland) Regulations 2010 |

## Ecology Critical Levels\*

| **Substance** | **Long Term concentration (µg/m3)** | **Short Term concentration (µg/m3)** | **Derivation method or information source** |
| --- | --- | --- | --- |
| Ammonia (ecological receptor - Sensitive Lichens) | 1 |  | UN ECE Convention on Long-range Transboundary Air Pollution (2007) |
| Ammonia (ecological receptor - other vegetation) | 3 |  | UN ECE Convention on Long-range Transboundary Air Pollution (2007) |
| Hydrogen fluoride (as F) (Ecological - Weekly mean/ Daily Mean) | 0.5 | 5 | WHO, 2002 Environmental Health Criteria 227: Fluorides pp 230 |
| Nitrogen Dioxide (Ecological - Daily Mean) | 30 | 75 | LT: The Air Quality Standards (Scotland) Regulations 2010/ST: WHO Air quality Guidelines for Europe 2000, 2nd edition |
| Sulphur Dioxide (Ecological - Sensitive Lichens) | 10 |  | WHO Air quality Guidelines for Europe 2000, 2nd edition |
| Sulphur Dioxide (Other Ecology) | 20 |  | The Air Quality Standards (Scotland) Regulations 2010 |
| Sulphur Dioxide (Ecological - Crops) | 30 |  | UN ECE Convention on Long-range Transboundary Air Pollution (2007) |

\* For more details see: [Critical Loads and Critical Levels - a guide to the data provided in APIS | Air Pollution Information System](https://www.apis.ac.uk/critical-loads-and-critical-levels-guide-data-provided-apis)

## Ecology Critical Loads

| **Substance** | **Long Term concentration (µg/m3)** | **Short Term concentration (µg/m3)** | **Derivation method or information source** |
| --- | --- | --- | --- |
| Nutrient nitrogen deposition (habitats specific) |  |  | For more details see: [Site Relevant Critical Loads and Source Attribution | Air Pollution Information System (apis.ac.uk)](https://www.apis.ac.uk/srcl) |
| Acid deposition for Nitrogen and sulphur (Site specific) |  |  | For more details see: [Site Relevant Critical Loads and Source Attribution | Air Pollution Information System (apis.ac.uk)](https://www.apis.ac.uk/srcl) |

\* For more details see: [Critical Loads and Critical Levels - a guide to the data provided in APIS | Air Pollution Information System](https://www.apis.ac.uk/critical-loads-and-critical-levels-guide-data-provided-apis)

## Environmental Assessment Levels (EALs)

| **Substance** | **Long Term concentration (µg/m3)** | **Short Term concentration (µg/m3)** | **Derivation method or information source** |
| --- | --- | --- | --- |
| 1,1,1-Trichloroethane (Methylchloroform) (24h mean long term) | 5000 |  | EA Hazard characterisation method for determining TCA (2021) |
| 1,2-Dichloroethane (Ethylene dichloride) | 3 |  | EA Hazard characterisation method for determining TCA (2021) |
| 1,2,4-Trichlorobenzene | 76 | 2280 | HSE EH40 (2001) |
| 1,2-Dibromoethane | 7.8 | 234 | HSE EH40 (2001) |
| 1,3 Butadiene (24h mean) |  | 2.25 | EA Hazard characterisation method for determining TCA (2021) |
| 1,4-Dichlorobenzene | 120 | 6000 | EH40/2005 (4th ed 2020) |
| 1,4-Dioxane | 730 | 36600 | LT: EH40/2005 (4th ed 2020)/ST: HSE EH40 (2001) |
| Acetaldehyde | 370 | 9200 | EH40/2005 (4th ed 2020) |
| Acetic acid | 250 | 3700 | HSE EH40 (2001) |
| Acetic anhydride | 1 | 40 | HSE EH40 (2001) |
| Acetone | 12100 | 362000 | EH40/2005 (4th ed 2020) |
| Acetonitrile | 680 | 10200 | EH40/2005 (4th ed 2020) |
| Acrylamide | 0.05 |  | EA Hazard characterisation method for determining TCA (2021) |
| Acrylic acid | 290 | 5900 | EH40/2005 (4th ed 2020) |
| Acrylonitrile | 8.8 | 264 | HSE EH40 (2001) |
| Allyl alcohol | 48 | 970 | EH40/2005 (4th ed 2020) |
| Ammonia (human health receptor) | 180 | 2500 | EH40/2005 (4th ed 2020) |
| Aniline | 8 | 240 | HSE EH40 (2001) |
| Antimony and compounds (as Sb) except antimony | 5 | 150 | LT: EH40/2005 (4th ed 2020)/ST: HSE EH40 (2001) |
| Arsine | 1.6 | 48 | LT: EH40/2005 (4th ed 2020)/ST: HSE EH40 (2001) |
| Benzylchloride | 5.2 | 158 | HSE EH40 (2001) |
| Beryllium and compounds (as Be) | 0.0002 |  | EPAQS Metals and Metalloids (2009) |
| Boron trifluoride |  | 280 | HSE EH40 (2001) |
| Bromine |  | 70 | EPAQS Halogen and Hydrogen Halides (2006) |
| Bromomethane | 200 | 5900 | EH40/2005 (4th ed 2020) |
| Butan-2-one (Methylethylketone) | 6000 | 89900 | EH40/2005 (4th ed 2020) |
| Butane | 14500 | 181000 | EH40/2005 (4th ed 2020) |
| Cadmium (24h mean) |  | 0.03 | Agency for Toxic Substances and Disease Registry (2012) |
| Carbon disulphide (24h mean) | 64 | 100 | LT: HSE EH40 (2001)/ST: WHO Air quality Guidelines 2000 |
| Carbon tetrachloride | 64 | 3200 | EH40/2005 (4th ed 2020) |
| Chlorine |  | 290 | EPAQS Halogen and Hydrogen Halides (2006) |
| Chlorobenzene | 47 | 1400 | EH40/2005 (4th ed 2020) |
| Chloroform (24h mean long term) | 100 |  | EA Hazard characterisation method for determining TCA (2021) |
| Chloromethane (Methyl chloride) (24h mean long term) | 18 |  | World Health Organization International programme for Chemical Safety (2000) |
| Chromium (VI) compounds (as Cr) | 0.00025 |  | EA Hazard characterisation method for determining TCA (2021) |
| Chromium (III) compounds (as Cr) (24h mean long term) | 2 |  | EA Hazard characterisation method for determining TCA (2021) |
| Copper and compounds (as Cu) (24h mean long term) | 0.05 |  | EA Hazard characterisation method for determining TCA (2021) |
| Dibutyl phthalate (DBP) | 50 | 1000 | EH40/2005 (4th ed 2020) |
| Dichloromethane (Methylene Chloride) (24h mean) | 770 | 2100 | LT: Hazard characterisation method for determining TCA (2021)/ST: Agency for Toxic Substances and Disease Registry (2000) |
| Diethyl ether | 3100 | 62000 | EH40/2005 (4th ed 2020) |
| Di-i-propyl ether | 10600 | 131000 | EH40/2005 (4th ed 2020) |
| Diisobutyl phthalate | 50 | 1500 | LT: EH40/2005 (4th ed 2020)/ST: HSE EH40 (2001) |
| Dimethyl sulphate | 0.52 | 15.6 | HSE EH40 (2001) |
| Dimethylformamide | 300 | 6100 | HSE EH40 (2001) |
| Ethyl acrylate | 210 | 4200 | EH40/2005 (4th ed 2020) |
| Ethylbenzene | 4410 | 55200 | EH40/2005 (4th ed 2020) |
| Ethylene oxide | 0.002 |  | EA Hazard characterisation method for determining TCA (2021) |
| Formaldehyde (30min mean) | 5 | 100 | LT: HSE EH40 (2001)/ST: WHO Air quality Guidelines for Europe 2000 |
| Hydrazine | 0.06 | 2.6 | HSE EH40 (2001) |
| Hydrogen bromide |  | 700 | EPAQS Halogen and Hydrogen Halides (2006) |
| Hydrogen chloride |  | 750 | EPAQS Halogen and Hydrogen Halides (2006) |
| Hydrogen cyanide (24h mean long term) | 2 |  | EA Hazard characterisation method for determining TCA (2021) |
| Hydrogen fluoride (as F) (Monthly Mean) | 16 | 160 | LT: EPAQS Addendum to Halogens and Hydrogen Halides Report (2009)/ST: EPAQS Halogen and Hydrogen Halides (2006) |
| Hydrogen iodide (Monthly Mean) | 5 | 520 | LT: EPAQS Addendum to Halogens and Hydrogen Halides Report (2009)/ST: EPAQS Halogen and Hydrogen Halides (2006) |
| Hydrogen sulphide (24h mean) | 70 | 150 | LT: EH40/2005 (4th ed 2020)/ST: WHO Air quality Guidelines for Europe 2000 |
| Manganese and compounds (as Mn) | 0.15 | 1500 | LT: WHO Air quality Guidelines for Europe 2000/ST: HSE EH40 (2001) |
| Mercury and its inorganic compounds (as Hg) (24h mean long term) | 0.06 | 0.6 | LT: EA Hazard characterisation method for determining TCA (2021)/ST: California Office of Environmental Health Hazard Assessment (2008) |
| Methanol | 2660 | 33300 | EH40/2005 (4th ed 2020) |
| Mono-ethanolamine (MEA) (24h mean long term) | 100 | 400 | EA Hazard characterisation method for determining TCA (2021) |
| Naphthalene (24h mean long term) | 3 |  | EA Hazard characterisation method for determining TCA (2021) |
| n-Hexane | 720 | 21600 | LT: EH40/2005 (4th ed 2020)/ST: HSE EH40 (2001) |
| N-nitrosodimethylamine (NDMA) | 0.0002 |  | EA Hazard characterisation method for determining TCA (2021) |
| Nickel and compounds (as Ni) except nickel carbonyl |  | 0.7 | EA Hazard characterisation method for determining TCA (2021) |
| Nitric acid | 52 | 260 | LT: HSE EH40 (2001) /ST: EH40/2005 (4th ed 2020) |
| Nitrogen monoxide (Nitric oxide) | 25 | 4400 | LT: EH40/2005 (4th ed 2020)/ST: HSE EH40 (2001) |
| Orthophosphoric acid | 10 | 200 | EH40/2005 (4th ed 2020) |
| Pentan-2-one (Methylpropylketone) | 7160 | 89500 | EH40/2005 (4th ed 2020) |
| Pentan-3-one (Diethylketone) | 7160 | 89500 | EH40/2005 (4th ed 2020) |
| Phenol | 78 | 1600 | EH40/2005 (4th ed 2020) |
| Phosgene | 0.8 | 25 | EH40/2005 (4th ed 2020) |
| Phosphine | 1.4 | 28 | EH40/2005 (4th ed 2020) |
| Polychlorinated biphenyls (PCB) | 0.2 | 6 | HSE EH40 (2001) |
| Propan-1-ol | 5000 | 62500 | EH40/2005 (4th ed 2020) |
| Propan-2-ol | 9990 | 125000 | EH40/2005 (4th ed 2020) |
| Propionic acid | 310 | 4600 | EH40/2005 (4th ed 2020) |
| Propylene oxide | 24 | 720 | LT: EH40/2005 (4th ed 2020)/ST: HSE EH40 (2001) |
| Selenium and compounds, except hydrogen selenide (as Se) (24h mean long term) | 2 |  | EA Hazard characterisation method for determining TCA (2021) |
| Sodium hydroxide |  | 200 | EH40/2005 (4th ed 2020) |
| Styrene (1 week average long term) | 260 | 800 | LT: WHO air quality guidelines for Europe (WHO 2000)/ST:HSE EH40 (2001) |
| Sulphur hexafluoride | 60700 | 759000 | EH40/2005 (4th ed 2020) |
| Sulphuric acid | 10 | 300 | HSE EH40 (2001) |
| Tetrachloroethylene (24h mean long term) | 40 |  | EA Hazard characterisation method for determining TCA (2021) |
| Tetrahydrofuran | 1500 | 30000 | EH40/2005 (4th ed 2020) |
| Toluene |  | 8000 | WHO air quality guidelines for Europe (WHO 2000) |
| Toluene (1 week average) |  | 260 | WHO air quality guidelines for Europe (WHO 2000) |
| Trichloroethylene | 2 |  | EA Hazard characterisation method for determining TCA (2021) |
| Trimethylbenzenes, all isomers or mixtures | 1250 | 37500 | LT: EH40/2005 (4th ed 2020)/ST: HSE EH40 (2001) |
| Vanadium (24h mean) |  | 1 | WHO Air quality guidelines for Europe 2000 |
| Vinyl acetate | 176 | 3520 | EH40/2005 (4th ed 2020) |
| Vinyl chloride (24h mean) | 10 | 1300 | EA Hazard characterisation method for determining TCA (2021) |
| Xylene, o-, m-, p- or mixed isomers | 2200 | 44100 | EH40/2005 (4th ed 2020) |
| Zinc oxide | 50 | 1000 | HSE EH40 (2001) |