

**Annex 4: Environmental events**

31 March 2025

**Annex 4: Environmental events**

The following categorisation tables are indicative and not exhaustive. Radioactive substances categories remain unchanged and can be viewed in Table 18.

For environmental events, we use the definition of environmental harm set out in the Regulatory Reform (Scotland) Act 2014.

Environmental harm is defined as:

1. Harm to the health of human beings or other living organisms.
2. Harm to the quality of the environment, including:
3. Harm to the quality of the environment taken as a whole.
4. Harm to the quality of air, water or land, and
5. Other impairment of, or interference with, ecosystems.
6. Offence to the senses of human beings.
7. Damage to property, or
8. Impairment of, or interference with, amenities or other legitimate uses of the environment.

**Category 1 environmental events**

**Category 1** events are those that cause or are likely to have caused the **most serious environmental effects.**

An event is likely to be Category 1 if it results or is likely to have resulted in at least one of the impacts in tables 1-5.

Category 1 events generally continue to cause environmental harm or to lead to increased environmental harm without intervention, and/or require natural regeneration for a period in excess of six months (ten years for groundwater), where natural regeneration is possible.

Examples of Category 1 events might be:

* A fire at a waste transfer site storing tyres, which leads to the evacuation of adjacent housing and smoke inhalation injury to residents.
* Persistent, continuous, offensive odour from a PPC site that causes distress to and changes of behaviour in a community for more than 6 months.
* Unauthorised engineering works in a designated watercourse that leads to the destruction of habitat or organisms e.g. of salmon spawning habitat or freshwater pearl mussel beds, so there is no longer a viable population.
* A construction project undertakes unauthorised dewatering that leads to the loss of a designated groundwater-dependent wetland habitat.
* An accidental leak or spill that adversely affects a Scottish Water potable source.
* Unauthorised disposal of hazardous waste leading to contamination of land and likely contamination of underlying groundwater by hazardous substances.

Tables 1 to 5 set out the types of impacts that are likely to result in a Category 1 environmental event by type.

**Table 1: Impacts to all receptors that are likely to result in a Category 1 environmental event.**

| **Environmental event category** | **Impacts to all receptors** |
| --- | --- |
| 1 | Qualifies as a MATTE (Major Accident to the Environment) for COMAH sites (severity levels 2-4 on the MATTE tolerability tables).   |
| 1 | Leads to cancellation, prevention or disruption of major public events.   |
| 1 | Has caused, or is likely to have caused, serious adverse direct health impacts to humans.   |
| 1 | Evacuation and/or closure of substantial areas of property or public spaces, including transport routes.   |
| 1 | Damage to a protected area or species that has a long-term or permanent impact on the integrity of the area or species. |

**Table 2: Impacts to air that are likely to result in a Category 1 environmental event.**

|  |  |
| --- | --- |
| **Environmental event category** | **Impacts to air** |
| 1 | Results in the Daily Air Quality Index in the affected area being ‘Very High’ for 3 days or longer. |
| 1 | Odour that is persistent, widespread and at an intensity, offensiveness and extent that it leads to a change in behaviour of exposed persons e.g. moving out of the affected area. |
| 1 | Odour that results in specific advice from the emergency services such as the closure of access roads, evacuation of property, or a need to remain indoors.  |
| 1 | Noise that is 20dB or more above background at any part of event **and** impact results in sleep disturbance or prevents use of amenity areas for 3 or more consecutive days.  |

**Table 3: Impacts to surface water that are likely to result in a Category 1 environmental event.**

|  |  |
| --- | --- |
| **Environmental event category** | **Impacts to surface water** |
| 1 | Results in a downgrade of Water Framework Directive classification, or classification equivalent, of more than one class, or the equivalent where the affected area of the water environment is not classified.   |
| 1 | Extensive, severe harm to or death of aquatic life, including harm to the functioning and integrity of the ecosystem.   |
| 1 | Extensive severe adverse impact to or loss of habitat, including destruction of fish spawning grounds. |
| 1 | Complete loss of flow resulting in loss of downstream species and/or habitats.    |
| 1 | Extensive loss of one or more species as a result of activities liable to cause environmental harm.   |
| 1 | Disruption of a public potable abstraction, or a change in treatment required, where the length of the disruption exceeds the amount of storage time in the network.     |
| 1 | Requires businesses downstream relying on non-potable abstractions to close or take urgent steps to implement additional treatment for more than 72 hours.     |

**Table 4: Impacts to groundwater that are likely to result in a Category 1 environmental event.**

|  |  |
| --- | --- |
| **Environmental event category** | **Impacts to groundwater** |
| 1 | Loss of a designated groundwater-dependent terrestrial ecosystem.   |
| 1 | Results in groundwater body becoming ‘Poor’ status.   |
| 1 | Entry of hazardous substances is likely to affect more than 1 hectare of groundwater.   |
| 1 | Non-hazardous substances are likely to affect more than 20 hectares of groundwater.   |
| 1 | Disruption of a potable groundwater abstraction, including where a change in treatment is required, where persons affected multiplied by hours of disruption equals greater than 1000.  |
| 1 | Disruption of a non-potable groundwater abstraction, including where a change in treatment is required, where the hours of disruption multiplied by the rate of abstraction measured in m3/day equals more than 10,000.   |

**Table 5: Impacts to land that that are likely to result in a Category 1 environmental event.**

|  |  |
| --- | --- |
| **Environmental event category** | **Impacts to land** |
| 1 | Presence of substances or materials that present a serious risk of direct adverse impacts to human health.   |
| 1 | Avoidable total or partial loss of soil health over an area exceeding 1 hectare and with impacts lasting for more than 5 years; or over an area greater than 10 hectares and with impacts lasting for 1 to 5 years.   |
| 1 | A pathway for contamination exists to a receptor leading to a likely impact of Category 1 on surface or groundwater.   |

**Category 2 environmental events**

**Category 2** events are those that cause or are likely to have caused **more** **serious environmental effects.**

An event is likely to be Category 2 if it results or is likely to have resulted in at least one of the impacts listed in tables 6-10.

Category 2 events would be expected to remain causing environmental harm or to lead to increased environmental harm without intervention, and to require natural regeneration of between one and six months (1 year for groundwater), where natural regeneration is possible.

Examples of Category 2 events might be:

* A discharge that leads to a density of sewage fungus covering the entire width of a watercourse for more than 200m or 20% of the river length, whichever is smaller.
* Engineering works in a river where the resulting silt pollution is uncontrolled and leads to the closure of a downstream abstraction for a fishing pond.
* An unauthorised abstraction that causes a prolonged drop in flows in a watercourse that leads to deterioration in Water Framework Directive status.
* An accidental leak or spill that adversely affects an agricultural water supply.
* Flytipping of more than 300 tyres or a skip load of asbestos sheeting on public ground in a community park.
* A combined sewer overflow discharging in dry weather six times in eight months.

**Table 6: Impacts to all receptors that are likely to result in a Category 2 environmental event.**

| **Environmental event category** | **Impacts to all receptors** |
| --- | --- |
| 2 | Be categorised as severity level 1 (significant) for COMAH sites under MATTE tolerability tables.   |
| 2 | Causes or may cause disruption or prevention of recreational activities in areas designated for such, including formal parks and bathing waters.   |
| 2 | Causes, or could cause, adverse direct health impacts to humans.   |
| 2 | The closure of or disruption to surrounding commercial or business activities.   |
| 2 | Likelihood of substantial consequential economic or commercial loss.   |

**Table 7: Impacts to air that are likely to result in a Category 2 environmental event.**

| **Environmental event category** | **Impacts to air** |
| --- | --- |
| 2 | Evacuation and/or closure of localised areas of property or public spaces, including transport routes, or advice given to shelter and remain.   |
| 2 | Odour that causes prolonged disturbance, typically leading to disruption rather than evacuation of dwellings.   |
| 2 | Odour that causes widespread but short-term effects, resulting in substantial impairment of amenity.   |
| 2 | Odour that causes a reduction in amenity value by preventing or substantially restricting the use of an amenity area such as a park for a period of time.    |
| 2 | Noise that results in sleep disturbance or prevents use of amenity areas for up to three days or disrupts but does not prevent use of amenity areas for 3 days or more.   |

**Table 8: Impacts to surface water that are likely to result in a Category 2 environmental event.**

| **Environmental event category** | **Impacts to surface water** |
| --- | --- |
| 2 | A Water Framework Directive classification downgrade of one class, or classification equivalent, or the equivalent if the affected area of the water environment that is unclassified, for greater than 20% of a waterbody extent.   |
| 2 | Extensive, or localised but severe harm to or death of aquatic life, including harm to the functioning and integrity of the ecosystem.   |
| 2 | Extensive, or localised but severe contamination or coverage by bacterial, fungal, or algal growths, hydrocarbons, or silt and/or particulates including ferrous deposits from mine water.   |
| 2 | Extensive, or localised but severe adverse impact to or loss of habitat, including partial destruction of fish spawning grounds.   |
| 2 | Disruption of a private potable abstraction, including where a change in treatment is required.   |
| 2 | Requires businesses downstream relying on non-potable abstractions to close or take urgent steps to implement additional treatment for between 24 and 72 hours.   |
| 2 | Activities cause flows in water course to be less than Q95 for more than 30 days.   |
| 2 | Partial loss of flow leading to adverse impacts on downstream species and habitats.   |
| 2 | Prevents free passage of migratory fish on a watercourse, where present, including by the blockage, destruction, or damage of or to a fish pass.   |

**Table 9: Impacts to groundwater that are likely to result in a Category 2 environmental event.**

| **Environmental event category** | **Impacts to groundwater** |
| --- | --- |
| 2 | Entry of hazardous substances into groundwater is probable.   |
| 2 | Non-hazardous substances impacting more than one hectare but less than 20 hectares of groundwater.  |
| 2 | Disruption of a potable groundwater abstraction, including where a change in treatment is required, where persons affected multiplied by hours of disruption equals greater than 10 but less than 1000. |
| 2 | Disruption of a non-potable groundwater abstraction, including where a change in treatment is required, where the hours of disruption multiplied by the rate of abstraction measured in m3/day equals greater than 100 but less than 10,000. |
| 2 | Impacts on groundwater levels/flows sufficient to result in ‘Poor’ quantitative status of the groundwater body. |

**Table 10: Impacts to land that are likely to result in a Category 2 environmental event.**

| **Environmental event category** | **Impacts to land** |
| --- | --- |
| 2 | Presence of substances or materials that present a risk of direct adverse impacts to human health.   |
| 2 | Avoidable total or partial loss of soil health over an area exceeding 0.04 hectare (400m2) and with impacts lasting for more than five years; or over an area exceeding one hectare and with impacts lasting for one to five years; or over an area exceeding 10 hectares with impacts lasting for less than one year.   |
| 2 | Substantial financial costs to third parties, including local authorities, in order to remove unauthorised deposits.   |
| 2 | A pathway exists to a receptor leading to a likely impact of Category 2 on surface or groundwater.   |

**Category 3 environmental events**

**Category 3** events are events that have or are likely to have resulted in localised, minor effects.

An event is likely to be Category 3 if it results in or may have resulted in at least one of the impacts listed in tables 11-15.

Examples of Category 3 events might be:

* A sewer choke leading to discharge in dry weather to a watercourse with no sensitive receptors (such as a bathing or shellfish water) downstream, where repairs are carried out promptly.
* A construction site leads to a visible plume of silt in the receiving water of a main stem river designated for Atlantic Salmon, however this dissipates within 20m, ceases within hours, and the impact is purely aesthetic.
* A septic tank discharge leads to sewage fungus covering the full width of a 1.5m wide watercourse for a distance of 100m.
* Flytipping of a small (less than1 skip load) of inert waste, such as soil and stones, on a roadside verge.

**Table 11: Impacts to all receptors that are likely to result in a Category 3 environmental event.**

| **Environmental event category** | **Impacts to all receptors** |
| --- | --- |
| 3 | Causes or may cause small-scale disruption of recreational activities.  |
| 3 | Indirect human health impacts such as stress.  |
| 3 | The possibility of low-level economic or commercial loss.  |
| 3 | Affects the aesthetic value of the surrounding area.  |

**Table 12: Impacts to air that are likely to result in a Category 3 environmental event.**

| **Environmental event category** | **Impacts to air** |
| --- | --- |
| 3 | Odour that has short-term and/or intermittent effects on residential receptors.  |
| 3 | Odour that has an intermittent and/or transitory effect on amenities and the use of the local environment that are not considered to be sensitive receptors, such as sports pitches. People are still able to use the area, and only a small proportion is affected.  |
| 3 | Noise results in sleep disturbance or prevents use of amenity areas for less than 1 hour or disrupts but does not prevent use of amenity areas for more than 1 hour but less than 3 days.  |

**Table 13: Impacts to surface water that are likely to result in a Category 3 environmental event.**

| **Environmental event category** | **Impacts to surface water** |
| --- | --- |
| 3 | Localised impacts to aquatic life, compromising the functioning and integrity of the ecosystem for a short time.  |
| 3 | Localised adverse impact to or loss of habitat, including fish spawning grounds where there are intact spawning grounds in the same waterbody.  |
| 3 | Localised contamination or coverage by fungal, bacterial or algal growths, hydrocarbons, or silt and/or particulates including ferrous deposits from mine water.  |
| 3 | Is not sufficient to lower the Water Framework Directive classification, or classification equivalent, or cause an impact that would have lowered the WFD classification had the affected area of the water environment been classified.  |
| 3 | Loss of supply to one or more abstractors authorised for volumes of less than 50m3/day (cumulatively).  |
| 3 | Impedes but does not prevent the passage of migratory fish on a watercourse, where present.  |

**Table 14: Impacts to groundwater that are likely to result in a Category 3 environmental event.**

| **Environmental event category** | **Impacts to groundwater** |
| --- | --- |
| 3 | Hazardous substances are unlikely to reach groundwater.  |
| 3 | Non-hazardous substances are unlikely to affect more than 1 hectare of groundwater.  |
| 3 | Disruption of a potable groundwater abstraction where persons affected multiplied by hours of disruption equals less than 10.  |
| 3 | Disruption of a non-potable groundwater abstraction where the hours of disruption multiplied by the rate of abstraction measured in m3/day equals less than 100.   |
| 3 | Localised impacts on groundwater levels/flows but is not sufficient to cause ‘Poor’ quantitative status of the groundwater body.  |

**Table 15: Impacts to land that are likely to result in a Category 3 environmental event.**

| **Environmental event category** | **Impacts to land** |
| --- | --- |
| 3 | Deposition of materials that pose no wider risk to the environment or human health.  |
| 3 | Avoidable total or partial loss of soil health over an area of greater than 0.0025 hectare (25m2) but less than 0.04 hectare (400m2) and with impacts lasting for more than 5 years; over an area exceeding 0.04 hectare (400m2) and with impacts lasting for 1 to 5 years; or over an area exceeding 1 hectare and with impacts lasting for less than 1 year.  |
| 3 | A low to moderate cost to third parties, including local authorities, for removal of deposits.  |

**Category 4 environmental events**

**Category 4** events are events that have or are likely to have immediately self-resolved or caused no ascertainable impact, see table 16.

**Table 16: Impacts that are likely to result in a Category 4 environmental event.**

| **Environmental event category** | **All impacts** |
| --- | --- |
| 4 | No evidence of environmental harm is apparent.  |
| 4 | Information supplied indicates an event occurred, but it was immediately self-resolving and has caused no ascertainable impact.  |

**Exacerbating and mitigating factors**

Where not already explicit within the category tables, the factors listed in table 17 may influence the assessed event category and make it more serious, and/or assist in interpretation of terms.

**Table 17: Exacerbating and mitigating factors that may influence the Category of an event.**

|  |  |  |
| --- | --- | --- |
| **Factor type** | **Exacerbating factors** | **Mitigating factors** |
| Repetition | Harm increased by cumulative impact. | Comprehensive action taken immediately to prevent a repetition.  |
| Receptor sensitivity | Receptor is designated under Habitats Directive, or the Nature Conservation (Scotland) Act 2004, and a feature is directly affected; or is designated for the purposes of the Regulatory Reform (Scotland) Act. | Harm is temporary and a result of work being undertaken to improve the designated site, and there will be a benefit overall. |
| Receptor sensitivity | Receptor has decreased environmental capacity due to weather, climatic, spatial or other circumstances. | Receptor has increased environmental capacity due to weather, climatic, or other circumstances.  |
| Receptor sensitivity | Receptor is already impacted by prior environmental events (related or unrelated). | Receptor is already downgraded to ‘Bad’ Water Framework Directive classification (or equivalent) and event does not impact its ability to recover. |
| Receptor sensitivity | Receptor has other important lawful uses such as British Waterways intakes or public potable water abstractions that are disrupted or prevented. | N/A |
| Receptor sensitivity | Receptor is a high importance river with a catchment of less than 100km2. | N/A |
| Spatial extent - extensive | Impacts more than a 500m length or 500m2 area of a ‘High’ status waterbody or unclassified watercourse less than 2km in length or 2km2 in area, and more than 1.5km length or 1.5km2 in area of all other waterbodies and watercourses. | Impact is highly localised (less than 10m in area of ‘High’ status or watercourses less than 2km length, less than 20m in all others).  |
| Spatial extent - extensive | Impacts more than 60% of the width of a watercourse more than 3m wide, or full width of a river more than or equal to 3m wide. | Impacts less than 10% of river width. |
| Spatial extent - extensive | Harmful effects to morphology that breach the single activity limit. | Morphology is highly dynamic and will recover during next flood event.  |
| Temporal extent | Effects are more prolonged. | Event lasts less than 6 hours. |
| Temporal extent | Impact is continuous with no potential for natural recovery. | Impact is ephemeral. |
| Intensity | Impact involves unauthorised or non-compliant discharge of priority and/or dangerous substances. | Activity could be authorised as-is. |
| Intensity | Release of substances at more than 5 times authorised limit. | N/A |
| Intensity | Unauthorised release of substances not subject to environmental degradation. | N/A |
| Intensity | Activity cannot be authorised, or unable to be authorised without derogation. | N/A |
| Biodiversity | Significant change in RICT class. | N/A |
| Biodiversity | Faunal distortion. | N/A |
| Biodiversity | Fails screening. | N/A |
| Economic | Causes losses that may result in redundancy, or failure of a SME. | N/A |
| Health | Causes moderate to severe illness or injury requiring medical treatment. | N/A |
| Health | Causes chronic health effects requiring medical management. | N/A |
| Amenity | Results in lack of availability for local community. | Amenity is already closed for unrelated reasons. |
| Amenity | Affects visitor numbers. | N/A |
| Amenity | Affects future viability of amenity asset. | N/A |
| Other agencies | Has been categorised as a major incident by the emergency services or another authority, for instance the HSE. | N/A |

**Radioactive Substances**

No change is proposed to the existing radioactive substances tables due to the compliance-focused nature of the category definitions, see table 18.

**Table 18: Environmental event classification for radioactive substances.**

| **Event Category**  | **Event description**  |
| --- | --- |
| 1 | An event involving radioactive substances is considered to be major where:* The total dose to a member of the public[[1]](#footnote-2) may **exceed 5 mSv/y**[[2]](#footnote-3); or
* There is widespread radioactive contamination requiring countermeasures; or
* Considerable secondary radioactive waste has been generated as a result of the event; or
* There is major impairment to commercial services in the vicinity of the event; or
* There is major adverse effect on the amenity value in the vicinity of the event.

“widespread contamination” would typically involve an event where the contamination could not be/has not been readily contained, such as a large discharge to atmosphere following a fire.“considerable secondary radioactive waste” would typically mean amounts greater than 5m3 of solid, longer-lived LLW which require disposal to an authorised person.“major impairment” relating to commercial activities would usually involve the closure of multiple businesses in the vicinity of the event.“major adverse effect” relating to amenity value would typically be an event which prohibits the normal range of activities at an important recreation activity, event or public space. |
| 2 | An event involving radioactive substances is considered to be serious where:* The total dose to a member of the public falls **between 1 mSv/y and 5 mSv/y**; or
* It involves a high-activity sealed source (HASS)[[3]](#footnote-4); or
* It involves an unsealed source with an activity greater than its D value; or
* There is significant spread of contamination; or
* significant secondary radioactive waste has been generated as a result of the event; or
* There is major impairment to commercial services in the vicinity of the event; or
* There is significant disturbance to commercial activities in the vicinity of the event; or
* There is a significant reduction in the amenity value of the area affected.

“significant contamination” would typically involve an event where the contamination can be contained and access to it controlled but which has spread beyond the area where the radioactive substance is normally kept.“significant secondary radioactive waste” would typically mean amounts of less than 5m3 of longer-lived LLW which require disposal to an authorised person.“significant disturbance” relating to commercial activities would usually only involve disruption to economic activity rather than closure of the businesses affected. |
| 3 | An event involving radioactive substances is considered to be minor where:* The total dose to a member of the public falls **between 10 µSv/y and 1 mSv/y**; or
* It involves a sealed source of similar level of hazard (SSLPH) or
* It involves an unsealed source with an activity greater than its D value; or
* Negligible secondary radioactive waste has been generated as a result of the event; or
* Minor spread of contamination; or
* Minor impairment to commercial services in the vicinity of the event; or
* Minor reduction in the amenity value of the area affected.

“minor contamination” would typically involve an event where the contamination has been contained to the room in which the radioactive substance is normally kept and access to the room is controlled.“negligible secondary radioactive waste” would typically mean items such as gloves or short-lived waste which can be expected to decay away in a reasonably short period of time (e.g., Tc-99m).“minor impairment” relating to commercial activities would usually involve some disruption for a short period of time without any significant economic loss to the businesses affected.“minor reduction” in relation to amenity value would typically mean a localised or transitory effect on local amenities that aren’t necessarily considered to be sensitive receptors, such as sports pitches. Normally, a small proportion of the amenity area would be affected and people would still be using the area despite the event. |
| 4 | An event involving radioactive substances is considered to be ‘other’ where:* The total dose to a member of the public falls **below 10 µSv/y**; or
* No secondary radioactive waste has been generated as a result of the event; or
* No spread of contamination; or
* No impairment to commercial services in the vicinity of the event; or
* No impact on the local amenity; or
* It is a reported event where there is no environmental impact or adverse consequence for the commercial activities or amenity value of the local area; or
* The event was unsubstantiated.

“reported event” would usually mean one where the authorised person informs SEPA that a technical or administrative condition of the authorisation may have been contravened or where the potential for environmental, economic, amenity impact did not occur (e.g., forewarning of possible failure).“unsubstantiated” would typically mean those events which were reported, usually by a member of the public, but were subsequently unable to be verified (e.g., fly tipping of radioactive waste). |

If you would like this document in an accessible format, such as large print, audio recording or braille, please contact our EPAS email  or telephone 0300 099 6699.

1. The listed dose rates do not apply to workers, as this is the responsibility of the HSE or ONR. If workers are involved the HSE/ONR should be notified immediately. [↑](#footnote-ref-2)
2. It is recognised that dose rates may not be able to be determined for all events. The values given are for guidance only. Furthermore, doses represent potential doses as reported/calculated in the early stages of an event, and these may change over the course of the event. [↑](#footnote-ref-3)
3. An orphan source is considered to be radioactive waste and is the responsibility of SEPA and not the HSE. [↑](#footnote-ref-4)