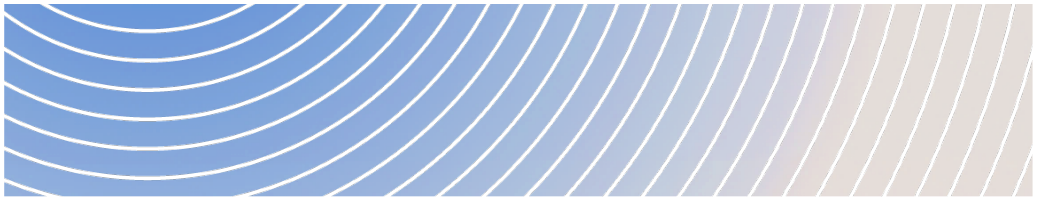
Impact Assessment Agency of Canada | Agence d'évaluation d'impact du Canada

Standard Mitigation Measures



STREAMLINING THE IMPACT ASSESSMENT PROCESS

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Canada

Contents

Introduction

The Impact Assessment Agency of Canada (IAAC) is working to make the impact assessment process more efficient, predictable, and focused. One way IAAC is achieving this is by introducing standard mitigation measures that may be used in assessments. These are commonly used mitigation measures and best practices to address well-understood adverse federal effects for proposed projects. By identifying and committing to these measures early in the assessment process, proponents can save time, reduce uncertainty, and focus efforts on the more complex and project-specific issues.

IAAC has compiled this list of standard mitigation measures based on years of experience, as well as feedback and consultations from past assessments. These measures are drawn from decision statements under the *Canadian Environmental Assessment Act, 2012* and the *Impact Assessment Act*, and reflect input from impact assessment participants, including proponents, Indigenous groups, federal authorities, stakeholders and the public provided during these project assessments.

This list is intended to inform all impact assessment participants of common mitigation measures that may be used to protect the environment and uphold Indigenous rights. When appropriate standard mitigation measures are identified early, less time and money is spent on mitigating well-understood adverse federal effects of a project and focus instead on resolving more complex project-specific issues. These standard mitigation measures also ensure upfront accountability and certainty for proponents and Indigenous Peoples, as they often become legally binding conditions in the project's decision statement.

How It Works: Planning Phase

Proponents are encouraged to identify, early on, which standard mitigation measures would be appropriate and which they could implement. In doing so, proponents should describe how the standard measures are associated with effects of project components or activities that could result in adverse federal effects and provide evidence of the extent to which these measures could mitigate these effects. Proponents can submit this information to IAAC as part of the Initial Project Description, Response to the Summary of Issues, Detailed Project Description where required, and/or as a separate document for public posting. Identifying this information early will ultimately reduce the

number of information requirements set out in the Tailored Impact Statement Guidelines and quickly direct efforts to more complex issues.

How It Works: Impact Statement Phase

Proponents analyze the effects of their project activities on areas of federal jurisdiction. Based on comments from federal authorities, and through early, ongoing and meaningful engagement with Indigenous groups, proponents can consider whether their proposed standard mitigation measures are sufficient to mitigate their project's adverse federal effects for common and well-understood pathways of effects. This will allow proponents to address common issues early. Time can be focused instead on residual effects and finding mitigation measures for more complex project-specific effects.

How It Works: Impact Assessment Phase

Standard mitigation measures identified during the Impact Statement phase will be assessed by IAAC to determine whether they are essential to ensure the project will not result in significant adverse federal effects, or to reduce their extent of significance. If deemed essential, IAAC will recommend these measures, and any additional mitigation measures, if the adverse effects in federal jurisdiction are not adequately mitigated by the standard measures alone in its Impact Assessment Report. These recommended measures will then be included or modified as needed to become legally binding federal conditions in the decision statement.

Things to Keep in Mind

- Not every listed standard mitigation is appropriate for every project. Proponents should critically review the list to determine which are appropriate for their specific context and potential effects, as will IAAC.
- Proponents need to engage with Indigenous groups when analyzing project-specific adverse federal effects and proposing standard mitigation measures.
- Additional mitigation measures will still be required if residual adverse effects are still likely to occur.
- Once proponents identify standard mitigation measures, they may become part of the project's legally binding conditions.
- When becoming a legally binding condition, these standard mitigation measures may need to be adapted to reflect the unique circumstances of the project and to ensure they are enforceable.
- Impacts to Indigenous health, social and economic conditions, current use of lands and resources, and cultural heritage have been minimally included as

standard mitigation measures, as these impacts should be developed on a project-by-project basis in collaboration with Indigenous groups.

- Follow-up programs may be needed to confirm that the mitigation measures are effective.
- IAAC expects this document and approach to be evergreen and this document will be regularly updated to reflect evolving standards and practices. For instance, IAAC tracks and reports on results of follow-up programs, which will continuously verify the effectiveness of existing standard mitigation and inform updates moving forward.

List of Standard Mitigation Measures

Table 1: Standard mitigation measures proposed to mitigate adverse federal effects for projects subject to an impact assessment pursuant to the *Impact Assessment Act*

Project Activity	Standard Mitigation Measure
FISH AND FISH HABITAT	
General activities that disturb soils and sediment	Implement, at a minimum, the following mitigation measures to control sedimentation, runoff and erosion, as appropriate, during all phases of the Project in order to meet total suspended solids thresholds [see Canadian Council of Ministers of the Environment's *Canadian Water Quality Guidelines for the Protection of Aquatic Life*, environmental or impact assessment predictions, or site specific water quality objectives, which ever are appropriate for your Project]: • Stabilize all erodible areas (including excavated materials) and regularly inspect and maintain the stability of these areas until they are permanently stable; • Install settling basin and/or filtration systems for water flowing onto the site and water being pumped or diverted from the Project site such that water run-off meets [insert appropriate threshold per above] before discharge into the receiving environment; • For any dewatering, do so gradually to prevent sediment resuspension and bank destabilization; • Install temporary clear span bridges to accommodate expected high water flows; • Maintain an undisturbed vegetated buffer zone of [insert appropriate distance] between areas of on-land activity and the high-water mark of any waterbody; • Isolate in-water Project activities from the receiving fish bearing waters to mitigate intensity, spatial scale and duration of sedimentation in fish habitat taking into account Fisheries and Oceans Canada's *Interim standard: in-water site isolation*; • Install structures to reduce scouring and sedimentation in aquatic areas intended to receive concentrated drainage, including water ditch checks, blocks, riprap, silt fencing as appropriate.
General activities that disturb materials that may be acid generating/metal leaching	During all phases of the Project in order to meet the water quality thresholds [see Canadian Council of Ministers of the Environment's *Canadian Water Quality Guidelines for the Protection of Aquatic Life*, environmental or impact assessment predictions, or site specific water quality objectives, which ever are appropriate for your Project], undertake, at a minimum, the following:

	• Describe the methods used to characterize and confirm through geochemical testing acid rock drainage and metal-leaching potential of rock materials that follow the methodologies provided in the Mine Environment Neutral Drainage program's *Prediction Manual for Drainage Chemistry from Sulphidic Geologic Materials*, including static and kinetic methods and the frequency and timing of characterization; • Characterize the acid rock drainage and metal-leaching potential of materials with potential geochemical risk for acid generation and metal leaching[1] prior to construction; • Confirm through geochemical testing, as appropriate to validate initial characterization and predictions; • Use only rock materials characterized as not acid-generating, non-potentially acid-generating and non-metal-leaching for project works; • Limit oxidation reactions in materials characterized as acid generating and metal leaching or potentially acid-generating and metal-leaching, which may include the use of covers.
General activities in fish habitat that may cause harm or death to fish	Implement, at a minimum, the following measures to protect fish and fish habitat during Project activities conducted in fish-bearing waters, unless otherwise authorized by Fisheries and Oceans Canada: • Conduct Project activities in or near fish-bearing water bodies in accordance with Fisheries and Oceans Canada's *Timing windows to conduct projects in or around water*; • Maintain fish passage in watercourses frequented by fish by avoiding activities that reduce minimum flows or remove existing passage structures–except in cases where watercourses are permanently removed for the construction of Project components; • Safely capture and relocate fish that may become trapped in isolated or enclosed areas, ensuring they are returned to the same watercourse or waterbody.
Vehicle and equipment movement	Avoid the introduction or propagation of invasive species within the Project area by cleaning vehicles and equipment before entering the Project area and prior to leaving any known site with invasives species within the Project area.

[1] *Materials with potential geochemical risk for acid generation and metal leaching* should consider all mined, excavated and historic materials including: mine waste and process waste (e.g. tailings, heap leach materials, treatment sludge, coarse coal rejects, processed kimberlite), waste rock, ore (offsite and low-grade), pit wall and underground development rock, overburden, and construction materials, as applicable.

Use of explosives in and around fish habitat	Avoid injury and mortality to fish when using explosives in and around fish bearing waters, unless otherwise authorized by Fisheries and Oceans Canada, by ensuring the following thresholds in their *Guidelines for the Use of Explosives in or near Canadian Fisheries Waters* are not exceeded: • An overpressure of 100 kilopascals (kPa) in fish habitat; • Peak particle velocity of 13 mm•s^{-1} in a spawning bed during the period of egg incubation. •
Pile driving in fish habitat	Implement the following measures to avoid injury and mortality to fish when pile driving in fish-bearing waters: • Give preference to the use of vibratory pile driving over impact pile driving unless not technically feasible as identified by a qualified individual[2]; • Use sound attenuation method(s) and/or technology(ies) when conducting impact pile driving underwater; • Use soft start procedures for impact pile driving, where technically feasible, to gradually increase the sound levels emitted by pile driving equipment before use at full operational power; • Implement underwater noise monitoring at [insert appropriate depth(s)] during in-water pile driving activities during construction to maintain underwater peak sound pressure levels below levels that will cause injury; • Immediately halt pile driving if monitoring indicates that noise levels exceed the threshold or if fish mortality is observed, and do not resume without implementing sound attenuation measure(s) to reduce noise levels below the threshold.
Pile driving, dredging, and other activities in marine mammal habitat that could produce noise levels harmful to marine mammals	Implement a marine mammal detection and response plan to prevent effects to marine mammals during construction, including: • Identify, in consultation with Fisheries and Oceans Canada, the underwater noise thresholds that are protective of marine mammals; • For all Project activities expected to exceed the identified underwater noise thresholds, establish boundaries based on acoustic modelling at the distance where noise levels are predicted to reach those thresholds; • Employ a marine mammal observer who is a qualified individual *(see footnote[2])* to detect and report the presence of marine mammals within the established acoustic boundaries, starting 30 minutes prior to and throughout the duration of activities generating underwater noise;

[2] *Qualified individual* means someone who, through education, experience and knowledge relevant to a particular matter, provides advice within their area of expertise.

	• Not start or immediately stop activities if marine mammals are detected within their respective acoustic boundaries. Activities may resume only once the marine mammals have left the boundary area or have not been sighted for at least 30 minutes; • Carry out pile driving only when effective visual monitoring of the established acoustic boundaries is possible; • Continuously monitor underwater noise levels at appropriate distances within the established acoustic boundaries during construction activities. Immediately halt activities if monitoring indicates that noise levels exceed the identified thresholds at any boundary, and not resume activities until sound attenuation measures-such as expanding the boundary distance-are implemented to reduce noise levels below threshold levels.
Use of concrete in fish habitat	Implement the following measures when using concrete, cement, mortars and other Portland cement or lime-containing construction materials in fish bearing waters: • Prevent sediments, debris, concrete, and concrete fines and any water contacting uncured or partly cured concrete or Portland cement or lime-containing construction materials, including water that may be used for exposed aggregate wash-off, wet curing, equipment and truck washing, from entering the receiving environment directly or indirectly; • Use pre-cast concrete, instead of cast-in-place, unless not feasible; • Have a CO_2 tank with regulator, hose and gas diffuser, or other equivalent technology easily accessible during these Project activities so that they can be deployed quickly to mitigate any spills that may occur and neutralize pH.
Installation of structures in fish habitat	Use only non-treated wood materials (e.g. pre-cast concrete, steel or plastic) for construction in fish bearing waters, where feasible. If the use of non-treated materials is not feasible, only use wood treated with water-based preservatives.
Use of water intake pipes in fish habitat	Install screens on the water intake structures taking into account Fisheries and Oceans Canada's *Interim Code of Practice for End-of-Pipe Fish Protection Screens for Small Water Intakes in Freshwater*.
Overprinting of fish habitat and other activities that cause residual harmful alteration, disruption, or destruction of fish habitat, and death of fish that cannot be otherwise mitigated	Develop, to the satisfaction of Fisheries and Oceans Canada and in consultation with Indigenous groups, and implement any offsetting plan for activities that may result in the harmful alteration, disruption, or destruction of fish habitat, or the death of fish associated with the Project. These plans should be developed taking into account Fisheries and Oceans Canada's *Policy for Applying Measures to Offset Harmful Impacts to Fish and Fish Habitat*. For any offsetting measures proposed in the plan that may cause direct or incidental adverse effects, develop and implement, following consultation with Indigenous groups and relevant authorities, measures to mitigate those effects.

MIGRATORY BIRDS	
Vegetation clearing, site preparation, blasting, and other land-disturbing activities	Determine, under the direction of a qualified individual *(see footnote[2])*, the presence, or likely presence of migratory bird nest(s) protected under the *Migratory Birds Convention Act, 1994* and its regulations and residences protected under the *Species at Risk Act* that may be adversely affected by [insert project specific activities] prior to initiating the activity. Non-intrusive methods used to determine the presence or likely presence of migratory bird nests should be appropriately selected based on the habitat type. Establish and delineate, under the direction of a qualified individual *(see footnote[2])*, setback distances around the nest(s) and residence(s) whose presence is likely or confirmed above, within which that activity shall not occur while those nest(s) are protected under the *Migratory Birds Convention Act, 1994* and its regulations or the *Species at Risk Act* or both. When establishing setback distances, take into account Environment and Climate Change Canada's *Guidelines to avoid harm to migratory birds - Establishing buffer zones and setback distances*.
Lighting design and operation	Control project lighting, while meeting regulatory, operational, health and safety requirements, to mitigate attraction and disorientation of migratory birds, taking into account the Convention on Migratory Species' *International Light Pollution Guidelines for Migratory Species* including by implementing the following measures: • Use directional lighting that targets only the areas where illumination is essential; • Optimize lighting design to reduce the total amount of lighting needed; • Use shielded fixtures to minimize glare and prevent light leakage into directions where light is not essential; • Use automatic sensors or strobe lighting in areas where continuous lighting is not essential.
Scheduled maintenance flaring	Conduct scheduled maintenance flaring outside of peak spring and fall migration periods for migratory birds, as identified by a qualified individual *(see footnote[2])*, to avoid disorientation and attraction to flares. If flaring must occur during migration periods, schedule it during daylight hours, beginning as early as possible to avoid nighttime flaring. *Alternative: Implement enclosed flare technologies to mitigate effects to migratory birds.*
Installation of transmission lines	Implement under the direction of a qualified individual *(see footnote[2])* line marking devices on transmission lines (e.g. aerial marker spheres, spirals, and suspended devices, bird strike diverters) at locations and intervals to increase transmission line visibility to

	migratory birds and reduce collisions, while taking into account the Aviation Power Line Interaction Committee's document *Reducing Avian Collisions with Power Lines.*
Contact water management	Ensure migratory birds do not access sources of contact water[3] that consistently exceeds Canadian Council of Ministers of the Environment's *Canadian Water Quality Guidelines for the Protection of Aquatic Life* by implementing deterrent measures.
CURRENT USE OF LANDS AND RESOURCES FOR TRADITIONAL PURPOSES	
Project employees' and contractors' recreational use of site and surrounding areas for non-project purposes	Prohibit employees and contractors associated with the Project from fishing, hunting, trapping, gathering plants, and using off-road vehicles for recreational purposes within the Project area, or from using the Project area to access surrounding areas for these purposes, unless such access is granted specifically to enable the exercise of Indigenous rights.
Ground-disturbing activities	Conduct progressive reclamation of areas temporarily disturbed by the Project to progressively return them to a state as close as possible to, or better than, baseline once they are no longer required for the Project, including: • Identify plant species of interest in consultation with Indigenous groups for use in establishing self-sustaining vegetation communities; • Invite Indigenous groups to participate in the reclamation activities.
HEALTH, SOCIAL AND ECONOMIC CONDITIONS OF INDIGENOUS PEOPLES	
Material handling and site operations that generate fugitive dust emissions	Implement, at a minimum, the following mitigation measures to control fugitive dust emissions from the Project, as appropriate, to mitigate adverse effects on the health of Indigenous Peoples: • Establish speed limits [insert maximum speed] on Project roads; • Use water or an environmentally acceptable alternative to stabilize the surface of Project roads and areas that may generate dust; • Cover or enclose material that may become a source of fugitive dust in stockpiles, moved on conveyors or transported within and outside the Project area.

[3] *Contact water* means water that has come into contact with any Project components.

Vehicle and equipment operation	Implement, the following mitigation measures to control fugitive particulate emissions from mobile equipment and vehicles operating in the Project area, as appropriate, to mitigate adverse effects on the health of Indigenous Peoples: • Establish and enforce a policy to prohibit unnecessary idling, except when required for health, safety, or operational reasons; • Ensure regular inspection, servicing, and maintenance of engines and exhaust systems on all mobile equipment and vehicles; • Prioritize the use of off-road equipment equipped with engines that meet the most stringent emission standards available, including the latest applicable tier of the *Off-Road Compression-Ignition Engine Emission Regulations*.
Operation of noise- and vibration-generating equipment and processes	Implement, the following mitigation measures to reduce exposure of noise and vibration from the Project, as appropriate, to mitigate adverse effects on the health of Indigenous Peoples: • Schedule blasting activities between 9:00 a.m. and 5:00 p.m., and avoid blasting on statutory holidays and on days of cultural importance as identified in consultation with Indigenous groups; • Provide advanced notice to Indigenous groups of the location and timing of Project activities that may impact health via noise or vibration through methods determined in consultation with Indigenous groups; • Limit the operation of mobile equipment to designated areas, avoiding key locations traditionally used by Indigenous groups; • Establish a process for receiving and addressing complaints within 48 hours of the complaint being received and implement corrective actions to reduce exposure in a timely manner.
Employment, procurement, and contracting processes	Implement the following mitigation measures to create and enhance opportunities for Indigenous Peoples, including Indigenous women and Indigenous businesses, to obtain and retain employment, procurement or contracting opportunities related to the Project, as appropriate: • Identify the prerequisite skills and training, both certified and uncertified, required to be employed by the Project; • Identify existing gaps in relation to the prerequisite skills and training among Indigenous Peoples that may be employed by the Project and describe additional measures under the care and control of the Proponent for filling these gaps, including the provision of on-the-job training and apprenticeship programs for Indigenous Peoples; • Inform Indigenous groups, using targeted communication procedures designed in consultation with Indigenous groups, of the skills and training prerequisites and measures to achieve these prerequisites;

	• Inform Indigenous Peoples of Project–related employment and procurement opportunities, using targeted communication procedures designed in consultation with Indigenous groups; • Promote equitable hiring and promotion processes; • Support the transition of Indigenous employees through the decline in employment and contracting opportunities during Project decommissioning and post-closure.
Workforce management and community integration	Implement the following mitigation measures to promote safe, respectful and inclusive conduct in the workplace and community, as appropriate: • Implement a workplace anti-harassment, anti-bullying, anti-discrimination and anti-violence policy that incorporates gender-appropriate, gender-specific, and culturally appropriate policies and processes, including sexual harassment and assault counselling as well as confidential and culturally sensitive care; • Implement a workplace policy on the use and possession of drugs and alcohol, which prohibits the use of, or being under the influence of, illicit drugs or alcohol during work hours; • Develop mandatory cross-cultural awareness training and provide the training to all employees and contractors associated with the Project; • Establish a worker code of conduct that outlines expectations and requirements in relation to the measures developed to promote safe, respectful and inclusive conduct in the workplace and the community while incorporating above policies; • Implement a fair and timely process to investigate and resolve incidents and complaints from Project employees.
PHYSICAL AND CULTURAL HERITAGE AND STRUCTURES, SITES OR THINGS OF HISTORICAL, ARCHAEOLOGICAL, PALEONTOLOGICAL OR ARCHITECTURAL SIGNIFICANCE	
Ground- and seabed-disturbing activities	Implement the following mitigation measures to protect and manage chance finds for any previously unidentified structures, sites or things of historical, archaeological, paleontological or architectural significance discovered within the Project area: • Immediately halt work at the location of a discovery; • Delineate an area around a discovery as a no-work zone; • Notify Indigenous groups and IAAC within 24 hours of a discovery and allow Indigenous groups to monitor archaeological works;

	• Develop mandatory training on chance finds, which includes the identification of sensitive locations within the Project area and the implementation of the above measures; and deliver this training to all employees and contractors associated with the Project.
EFFECTS OF THE ENVIRONMENT ON THE PROJECT AND ACCIDENTS AND MALFUNCTIONS	
Infrastructure design and engineering	Design Project infrastructure to meet applicable codes and standards that address seismic activity, permafrost conditions, wildfires, landslides, slope stability, marine geological hazards, and extreme weather events. This includes, as appropriate: • Tailings management facility containment structures designed in alignment with best practices, such as the Canadian Dam Association's *Dam Safety Guidelines* and the Mining Association of Canada's *Guide to the Management of Tailings Facilities*; • Water management structures designed to accommodate, at a minimum, a 1-in-100-year flood event, based on historical climate data and projected future changes in extreme rainfall over the lifespan of the structures.
Accident and malfunction response planning	Implement the following mitigation measures to prevent accidents and malfunctions that may result in adverse federal effects, as appropriate: • Establish fire and spill prevention plans; • Restrict vehicle and equipment refueling and servicing to designated locations; • Use secondary containment systems for the storage of hazardous materials; • Provide training to Project employees on accident and malfunction prevention and response.
Accident and malfunction response planning	Develop and maintain an accidents and malfunctions response plan including: • A description of potential accidents and malfunctions that may cause adverse federal effects during any phase of the Project, including both worst-case and more likely alternate scenarios; • Measures for each scenario aligned with Environment and Climate Change Canada's *National Wildlife Emergency Response Framework*; • Clearly defined roles and responsibilities for the Proponent, relevant authorities and other parties involved in response efforts.

	In the event of an accident or malfunction:
	• Notify relevant emergency response authorities;
	• Inform Indigenous groups as soon as feasible, and IAAC within 24 hours, while providing:
	  ○ the date, time, and location of the accident or malfunction;
	  ○ a summary of the accident or malfunction;
	  ○ the substance and quantities released;
	  ○ the relevant authorities notified and involved in the response;
	• Submit a report to IAAC within 60 days, describing:
	  ○ the incident and its adverse federal effects;
	  ○ measures taken to mitigate the adverse federal effects;
	  ○ feedback from Indigenous groups and relevant authorities;
	  ○ residual effects and any additional mitigation or monitoring measures;
	• Steps taken to prevent recurrence.

Accident and malfunction response planning	Develop a communication plan in consultation with Indigenous groups for accidents and malfunctions, and including: • The geographic areas where Indigenous groups would like to receive notifications; • The types and thresholds of incidents that would trigger notification; • The information to be included in notifications to support community preparedness and response; • The method and frequency of notifications, including opportunities for Indigenous group involvement in response efforts.

Additional Guidance

Fish and fish habitat

- Transport Canada's *TP 15577 – Navigation Safety Assessment Process National Guidelines (2023)*

- Fisheries and Oceans Canada's *Standardized General Avoidance and Mitigation Measures (2024)*
- Fisheries and Oceans Canada's *Measures to Protect Fish and Fish Habitat Ensure proper sediment control*
- Canadian Standards Association's *Erosion and Sedimentation management for northern community infrastructure (CSA W205:19)*
- Canadian Standards Association's *Erosion and sediment control installation and maintenance (CSA W208:20)*
- Environment and Climate Change Canada's *Environmental Code of Practice for metal mines (2009)*
- Environment and Climate Change Canada's *Pollution prevention planning provisions of part 4 of the Canadian Environmental Protection Act: Guidelines (2025)*
- Mine Environment Neutral Drainage program's *Prediction (2000)*
- Mine Environment Neutral Drainage program's *List of Potential Information Requirements in Metal Leaching/Acid Rock Drainage Assessment and Mitigation Work (2005)*

Migratory birds

- Environment and Climate Change Canada's *Guidelines to avoid disturbance to seabird and waterbird colonies in Canada*

Health, social and economic conditions of Indigenous Peoples

- Environment and Climate Change Canada's *Environmental Code of Practice for metal mines (2009)*
- Prepared for Environment and Climate Change Canada, *Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities (2005)*
- Health Canada's *Guidance for Evaluating Human Health Effects in Impact Assessment: Noise (2023)*

Accidents and malfunctions

- Environment and Climate Change Canada's *Code of practice for storage tank systems containing petroleum and allied products (2003)*
- Environment and Climate Change Canada's *Report an environmental emergency*