From: Nicole Corrado
To: Nuclear Waste / Déchets Nucléaires (IAAC/AEIC)
Subject: Deep Geological Repository (DGR) for Canada"s Used Nuclear Fuel Project
Date: Sunday, May 10, 2026 11:58:22 PM

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Continually creating toxic waste that lasts 100s of years and dumping it in a cave is a terrible idea. Nuclear will not solve the climate crisis, it will create its own problems. I grew up near a nuclear dump for the first 9 years of my life, and a nuclear power plant for the next 25 years. I think it did affect my health. How will this affect the environment and animals long term? And please do not use animals for testing, or as warning signals. The idea of genetically modifying cats and other animals to glow near nuclear is absolutely cruel (and animal abandonment). Do not drill into the rock to dump nuclear waste, it might create an earthquake. And the Earth is a living sentient being herself. Don't drill into her and fill her with poison.

Nuclear should NOT be done near fish frequented waters. Destroys a forest and river. Please do NOT put a mine here. It will kill the fish and any humans and animals who eat the fish. It will pollute the water, also affecting humans and other animals.

There is a need to replace animal testing and it can be done. Ireland uses alternatives to acute lethality testing on fishes and bans the fish tests. Please do not use animal testing for environmental monitoring. Acute lethality tests are no longer allowed nor used in Ireland.

Examples of media that can be collected and analyzed during PM include

a) *foodstuffs (consumed by humans);*

b) *air;*

c) *surface water;*

d) *groundwater (see CSA N288.7);*

e) *soil and sediment;*

f) *vegetation consumed by herbivorous receptors; and*

g) *tissues of prey animals consumed by carnivorous receptors*

Animals should not be killed and cut up for monitoring. Animals are not "foodstuffs". Please do not examine animal tissue unless it is from naturally or accidentally deceased animals, or from samples taken during veterinary care (biopsies), and stool samples.

Examples of BEM include

a) *fish surveys conducted by collecting fish in both the exposure area and a reference area and comparing measurements of length, weight, gonad size, liver size, fecundity, and egg size; and*

b) *benthic invertebrate community surveys conducted by collecting benthic invertebrates in both the exposure area and a reference area and comparing benthic invertebrate density, taxa richness, measures of biodiversity, or differences in community structure.*

Killing and cutting up fishes to obtain their livers and reproductive organs is incredibly cruel and wasteful. We wouldn't do this to humans or companion animals. If fishes are to be examined, live catch them and take non lethal bio samples, then release them. Only take lethal samples from fishes who die accidentally, or are killed for human consumption.

Do not kill animals for dissection. Use non animal methods.

Use non animal monitoring methods and use conceptual models to eliminate animal methods.

Human health and safety is best studied using non animal methods. Animal testing fails in human medicine because their bodies are different. Use human relevant non animal methods.

Biological effects can be studied using non animal methods like human biomonitoring, or humane animal methods like biomonitoring pets, farm animals, and wildlife using the same harmless methods used to test humans.

This model of an ecosystem and bioaccumulation effects can be done by monitoring soil and plants at the base of the foodchain, then develop a computer model to determine how the contamination in the plants would rise up the foodchain.

Guidelines for the design elements of an EMP should use modern, non animal, cruelty free methods, human biomonitoring, and non invasive, non lethal veterinary biomonitoring. The only samples from dead animals should be from animals found dead, or animals killed for human consumption. No animals should be killed for monitoring purposes. And acute lethality tests, along with other laboratory tests on animals, should be banned, as they are in many EU countries like Ireland.

j) the method used to monitor that contaminant, physical stressor, or biological effect (Clause 8);

This should only include non lethal, humane, non invasive methods that do not involve killing animals or keeping them in labs.

Sampling should only include non destructive and non invasive methods. Use the same biometrics for humans when sampling fishes, birds, frogs, mammals, and other animals.

1) *Destructive sampling of ETV species is usually inappropriate, and their rarity generally precludes useful measures of effect*

This should, instead read, 1) *Destructive sampling animals is always inappropriate, and their sentience makes destructive sampling unethical.*

Common animals are just as sentient as rare ones.

Non animal methods, or biomonitoring in a way that doesn't harm animals, should be the only methods considered relevant.

Dose assessments should be done only through non invasive biomonitoring. Avoid animal testing and animal destruction.

Study thermal measurements with a thermometer, not by testing on fishes.

Impinged fishes should be rescued, not killed and experimented on. Work with a local open admission humane society and an exotic pet veterinarian who treats fishes to provide a fish rescue program.

Work with wildlife rehabilitation centres to protect habitat.

Animal Receptors of interest are stakeholders in their own right. They are not just food for humans.

Please use non animal human biomonitoring to study receptors of interest.

Sampling design should be non lethal, humane, and non invasive.

Sample plants, and aquatic bacteria, then use a computer model to estimate bioaccumulation.

If samples are taken from fish tissue, only sample fishes who are caught for food. Do not kill for sampling methods.

While biomonitoring studies on humans were done in a cruelty free fashion using urine samples, acute lethality testing/lethal dose testing was done on fish, as well as plenty of other animal experiments to monitor for substances. Please move away from animal testing and only use cruelty free biomonitoring and non animal methods.

Federal Environmental Quality Guidelines are based on horrific animal studies in which animals are forced to breathe, be burned by, ingest, and be blinded by chemicals. They are then killed, or die from the chemicals. Rats were forced to eat and breathe these chemicals until half died; the rest were killed. Pregnant animals were tested on and the moms and babies were killed. Plus all sorts of other horrific experiments.

And under current Canadian policy, the minimum requirement for a type A freshwater guideline include horrific toxicology tests including the LD50 test on 3 fish species (at least one salmonid and one non salmonid), 3 invertbrates including a crusteacean, and one plant. All sorts of Acute Lethality Testing/LD50 Testing was conducted. These tests are remarkably cruel and outdated. Other wildlife, like fish, frogs, birds, small mammals, etc, are lethal sampled in the wild, or are tested on and killed in labs. Even cats, dogs, bunnies, and non human primates are often used in toxicology research.

Many of these studies were conducted years ago, when this type of research was common. Considering Canada has banned cosmetics testing on animals, and that Canada is phasing out vertebrate toxicity testing by 2035, this testing on animals seems counterproductive.

https://www.canada.ca/en/health-canada/services/cosmetics/animal-testing-ban/guidance-document.html

Please switch to Non Animal Methods for all toxicology research and Federal Environmental Quality Guidelines. https://www.change.org/p/stop-testing-sewer-water-on-laboratory-fish

1) *Measures of biological effect at the individual level could include toxicity testing of site media (water, soil, and sediment), using standard but site-relevant test organisms and test procedures. Relevant test endpoints for individuals could include*

a) *measures of mortality;*

b) *reproductive impairment; and*

c) *growth impairment.*

2) *Chronic (long-term, relatively lower intensity) rather than acute (i.e., short-term and high intensity) tests are preferred for assessment of chronic exposure situations, whereas acute tests would be more relevant under emergency exposure conditions.*

3) *A series of aquatic and terrestrial toxicity test methods are available online from Environment and Climate Change Canada (2024).*

These tests are incredibly cruel, and are banned in many EU countries. Federal Environmental Quality Guidelines are based on horrific animal studies in which animals are forced to breathe, be burned by, ingest, and be blinded by chemicals. They are then killed, or die from the chemicals. Rats were forced to eat and breathe these chemicals until half died; the rest were killed. Pregnant animals were tested on and the moms and babies were killed. Plus all sorts of other horrific experiments.

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4) *Measures of effect at the population level could include field measurements of organism abundance, fecundity, reproduction, or other population metrics. As an example, see CSA N288.9 for guidance on measures of effect from impingement and entrainment. Measures of biological effect at the population level could also include incidental wildlife-vehicle mortality (see Clause 7.6.3) or bird-structure mortality (see Clause 7.6.4) in the terrestrial environment. This could entail counts or estimates of organisms killed over the course of a year or surrogate measures that reflect these parameters.*

I agree with avoiding killing animals by only dissecting ones who died in accidents.

5) *Monitoring of vertebrate populations is technically complex and more often than not has failed to provide adequate information support for decision-making on risk management. This problem can be corrected with better attention to design, especially two important sources of variation in animal counts that should be dealt with in program design: spatial variation and detectability.*

6) *Measures of effect at the community level could include field measurements of total organism abundance (all species), species diversity, or other community metrics. Examples of guidance on field measurements of effect are provided by Environment Canada (2012) for aquatic environments (mining sector) and in the context of nuclear reactor facilities. Barnthouse et al. (2008), Thompson (1998), Williams et al. (2002), and Pollock et al. (2002) provide additional information.*

7) In biological sampling, it may be necessary to balance the need for statistical power against the need to minimize harmful effects on organisms and their populations. Consideration may be given to use of non-lethal sampling techniques (e.g. eDNA, tissue plugs) or relaxing desired confidence levels to decrease the number of lethal samples required.

I agree with this. DNA and tissue plugs (biopsies) are humane. The number of lethal samples needs to be reduced to zero.

Using animals who died in car accidents for samples is a good idea, because it eliminates killing for sampling.

Using birds who died in accidents for samples is a good idea, because it eliminates killing for sampling.

3) *For example, monitoring of the relevant wildlife food pathways will permit greater confidence in wildlife dose and risk estimates.*

Please only sample wildlife who died by accident, natural causes, or who were killed for food. Please do not kill animals for samples.

Select media that is non lethal and non invasive.

Selection of the media to be monitored should be based on the following principles:

1. *The environmental media or compartments along the pathway linking the source to the receptor that might be monitored should be considered to provide the concentration/intensity information required to assess the exposure/dose to the receptor.*
2. *Generally, monitoring should be done near the ends of the pathways (i.e., closer to the receptor) to give exposure/dose estimates with fewer uncertainties that arise from inaccuracies in the models and transfer coefficients. However, if concentrations/intensities are small, then the results of the measurements themselves can be subject to very large uncertainties. In these cases, measurements may be made closer to the source.*
3. *Humans are at the end of the pathway and should be monitored.*
4. *The fate and distribution of the contaminants should be considered when selecting the environmental media to be sampled.*
5. *The mobility of the contaminant and the receptor should be considered when selecting the environmental media to be sampled.*
6. *Variations in concentration should be considered when selecting the environmental media to be sampled. For example, concentrations in flowing water might be highly variable through time, making it difficult to estimate exposures for aquatic biota.*
7. *If measurements of meteorological data and hydrological data are not already available from the ERA or the other programs, site-specific measurements should be made.*

Note: *There is balance in meeting statistical sampling criteria and the effects of lethal sampling to minimize effects on individuals and populations by:*

1. *using statistical models that require no or little lethal sampling;*
2. *using alternate sample collection or techniques to supplement program (e.g., eDNA, muscle plugs); or*
3. *changing the confidence level to decrease the number of lethal samples required.*

This may include non-lethal sampling programs or limiting the number of lethal samples when statistical variation is high (reducing the confidence level). Consider the guidance from the MDMER EEM program or the Mining Association of Canada's Guidance on Conducting Studies of Selenium in Fish Tissue *(2023).*

Mining tests on selenium are cruel. Use non animal methods. And stop working with scientists, trappers, hunters, and anglers to catch, kill, and cut up fish, frogs, mammals, birds, etc to weigh and test their organs for selenium, mercury, other pollutants, and reproductive issues. There are humane non lethal tests to examine if any wild animal is healthy and have not been exposed to toxins. Please also stop the mandate to kill some of the live fish being brought into Canada for disease lethal sampling. https://inspection.canada.ca/animal-health/aquatic-animals/imports/test-selection-and-sampling-requirements/eng/1548710570282/1548710570578

Alternate sampling techniques, such as eDNA and muscle plugs, may be used if the technique meets sampling design and criteria. DNA and tissue plugs (biopsies) are humane. The number of lethal samples needs to be reduced to zero. Please switch to Non Animal Methods

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