

Sectoral meetings

Introductory document

On September 19, 2019, the Minister of Environment and the Fight against Climate Changes (Ministère de l'Environnement et de la Lutte contre les changements climatiques; MELCC) mandated the Environmental Public Hearing Office (Bureau d'audiences publiques sur l'environnement; BAPE) to advise the Québec government on the direction should take any future projects involving asbestos ([Mandate letter](#), in French). More specifically, the mandate of BAPE is to hold an inquiry and public hearings on the assessment of asbestos situation, its management and asbestos mine tailings. This mandate was outlined in four points, which can be summarized as follows:

- establish the picture of the asbestos situation in Québec Province;
- make the state of knowledge on asbestos;
- **assess the relevance of developing a framework for the valorization of asbestos mine tailings and, if appropriate, propose a framework;**
- recommend procedures for disposing asbestos residues that respect the environment and ensure public health.

A commission of inquiry was established for this purpose (hereafter "the Commission"). The Commission decided to hold five sectoral meetings to seek input from persons of different sectors on the third aspect of its mandate, namely, to assess the relevance of valorizing asbestos mine tailings and, if appropriate, under which conditions. The sectors targeted by these sectorial meetings are government ministries, research, municipalities and citizens, employers and workers.

Synthesis of information

The Commission gathered information related to the valorization of asbestos mine tailings from the sectoral reports produced by different government ministries and one organization (see the <https://www.bape.gouv.qc.ca/fr/> for more information). To provide key inputs to participants of the sectoral meetings, the Commission presents here a summary of these information.

Tailings, location and content

- There are several asbestos mine tailings in Québec Province, mainly in the Estrie and Chaudière-Appalaches regions. Together they could represent over 800 million tons of material.
- Asbestos mine tailings consist mainly of rocks of the serpentine family (e. g. lizardite and chrysotile) and contain approximately 25 % (by weight) of elemental magnesium. Characterization studies also confirmed a significant proportion of silica, nickel, iron, manganese and chromium (MELCC report, p.21).
- There are also 5 to 40 % (by volume) of chrysotile asbestos fibers in these tailings, with an average of 20 % (MELCC report, p.20).

- Since 2005, around 300 and 400 ha of tailings have been revegetated in Asbestos and Thetford Mines regions, respectively (MELCC report, p. 27). Other revegetation projects are currently underway.

Human health issues

- A person exposed to asbestos fibers in ambient air can develop various diseases such as asbestosis, pleural cancer (or pleural mesothelioma) and lung cancer (MSSS report, p. 10).
- The main risk to human health from exposure to asbestos fibers is associated with the respiratory tract. Airborne fibers are therefore the main concern (MSSS report, p. 9).
- In Québec, asbestos-related illnesses account for approximately 85 % of occupational deaths annually, and this situation occurs since several years (MSSS report, p. 19).
- The current exposure standard for Québec workers is 1 fiber/ml for an average exposure period of 8 hours a day, 5 days a week. It is 10 times higher than the Canadian standard and 100 times higher than the standard of some European countries (CNESST report, p. 42).
- This standard has been reviewed by a joint committee of the Standards, Fairness, Occupational Health and Safety Commission (Commission des normes, de l'équité, de la santé et de la sécurité du travail; CNESST), but no consensus has been reached, even after mediation. A new standard will soon be proposed to its board of directors.
- According to the World Health Organization (WHO), there is no safe exposure threshold for all types of asbestos fiber in ambient air (MSSS report, p. 30).

Environmental issues

- The handling of asbestos mine tailings could lead to the emission of asbestos fibers in the air.
- In Québec Province, there are no standards or criteria for the population exposure to asbestos fibers in the air (MELCC report, p. 30).
- The analytical method generally used to determine the airborne fibre concentrations is the phase contrast microscopy (PCM). This method allows the identification of fibers $\geq 5 \mu\text{m}$ but cannot distinguish asbestos fibers from other fibers (MELCC report, p. 34).
- Transmission electron microscopy (TEM) is also used. This method is more accurate because it allows to observe fibers as small as 0.2 nm and to identify the different types of asbestos fibers (MELCC report, p. 34).
- The tailings are subject to water erosion (by rain and snow melt) which potentially leads the run off of asbestos fibers and other contaminants in the surface waters and surrounding soils.
- At the request of the Commission, the Ministry of Health and Social Services (Ministère de la Santé et des Services sociaux; MSSS) and the MELCC agreed to collaborate in order to determine an acceptable airborne fibre concentration for the population. The Commission will organize and participate to these discussions.

Economic issues

- The valorization of asbestos mine tailings could represent a good economic potential for des Sources and Chaudière-Appalaches regional municipalities.
- Several projects to valorize the asbestos mine tailings have been submitted to the Ministry of Economy and Innovation (Ministère de l'Économie et de l'Innovation; MEI), totalling more than 1.3 billion \$ of investment and potentially creating 650 jobs (MEI report, p. 15).
- Les Sables Olimag Inc., which manufacture synthetic olivine from asbestos mine tailings, has been in operation since 1986. Alliance Magnesium Inc. produces magnesium ingots from asbestos mine tailings and is currently in the construction phase of a pilot plant (MEI report, p. 16).

Position of different ministries on the valorization of asbestos mine tailings

Ministry of the Environment and the Fight against Climate Change (MELCC)

The MELCC would support the development of a framework for the valorization of asbestos mine tailings if it would include environmental protection and health protections for the population and workers. Since such valorization projects involve risks of emitting asbestos fibers in the air, the MELCC recommends acting with caution. The following conditions are examples of what might be required:

- Projects requiring the handling (extraction, crushing, sieving and grinding) of mining residues would have to respect the airborne quality standards by providing an atmospheric dispersion model and proposing mitigation measures that would comply with article 20 of the Environmental Quality Act.
- Projects should include monitoring of ambient air quality including measurement of asbestos fibers in ambient air (by electron microscopy) on sites and in neighbouring communities, to ensure that there is no increase in population exposure.
- Air quality assessment should be carried out over a sufficiently long period of time prior to the implementation of a project, to obtain an adequate assessment of the initial asbestos fiber concentration in the air.
- Monitoring of ambient air quality should be part of a governmental authorization.

Furthermore, the use of asbestos mine tailings for backfilling or in infrastructure materials should be prohibited.

Ministry of Health and Social Services (MSSS)

From the point of view of health prevention, the ideal situation for the MSSS would be not to authorize the valorization of asbestos mining residues.

However, should such a valorization be considered, the MSSS recommends that the following conditions should be implemented:

- Add asbestos and the materials containing it into the Regulation on Hazardous Materials and in the Environment Quality Act
 - Plan measures to protect the health of workers and the population.
 - Ensure that asbestos fibers in the air would not exceed the background level.
 - Subject valorization projects to an environmental impact study and a health risk assessment.
- Apply strict conditions with sustained monitoring.

Standards, Fairness, Occupational Health and Safety Commission (CNESST)

The CNESST would ensure that the application of the regulations under its jurisdiction would be followed (Regulation on Occupational Health and Safety, Safety Code for the Construction Industry, as defined in the Occupational Health and Safety Act). Specifically, certain conditions would be required:

- The framework for the valorization of asbestos mine tailings should account for handling and processing activities susceptible to emit dust.
- Establish measures to control the emission of asbestos dust and protect workers.
- Cooperation between the various organizations involved should be favoured in order to ensure consistent management of regulatory requirements and their applicability.

Ministry of Economy and Innovation (MEI)

For MEI, the safe valorization of asbestos mine tailings should subscribe to the principles of circular economy, offers a solution for the management of the thousands of tons of asbestos mine tailings, and represents a significant economic potential. The MEI coaches and can provide financial support to companies developing such projects. It also supports companies in their industrial projects as well as in their research and development. However, these companies must comply with Quebec's laws and regulations. Two conditions should be implemented for the success of valorization projects from asbestos mine tailings:

- Supervision of the handling of asbestos mine tailings should take place in order to protect workers and the population.
- Various techniques and technologies should be implemented to allow businesses to operate in a safe, viable and profitable environment.

Ministry of Municipal Affairs and Housing (MAMH)

The MAMH (Ministère des Affaires Municipales et de l'Habitation) believes that municipalities should be closely associated with the development of a framework on valorization of asbestos mine tailings. The objectives of this framework should include the following conditions:

- Maintaining public health and safety, and establishing suitable conditions for community development.
- Risk reduction at the sites where asbestos mine tailings are located.
- Mitigating the impact of off-site valorization activities.
- Developing a framework of valorization of asbestos mine tailings while respecting the competence and jurisdiction of the regional and local municipalities.

Ministry of Energy and Natural Resources (MERN)

The MERN (Ministère de l'Énergie et des Ressources naturelles) considers that projects aiming to valorize asbestos mine tailings have economic potential, particularly in the areas Asbestos and Thetford Mines. These projects would exploit a mineral that has already been extracted from the ground.

The conditions set by MERN would be:

- The submission to the MERN of a rehabilitation and restoration plans, and the provision of a financial guarantee by any operator of an asbestos mine tailing valorization facility.
- Maximum recovery of economically exploitable minerals, in accordance with the Mining Act.

Ministry of Transportation Québec (MTQ)

The MTQ (Ministère des Transports du Québec) does not have a position on the valorization of asbestos mine tailing. Its report rather focused on the use of asbestos enriched materials (mainly asphalt) for the construction of noise and wind blocking structures in road rights-of-way. However, the MELCC currently restricts these uses considering the overall large quantity of these materials to manage.

Ministry of Education and Higher Education (MÉES)

Although MÉES (Ministère de l'Éducation et de l'Enseignement supérieur) is concerned by the presence of asbestos in several educational infrastructures, it has not developed any expertise in the valorization of asbestos mine tailings. Nevertheless, it would ask that:

- The valorization projects consider the presence of students and school workers near the storage, handling and processing facilities of material containing asbestos.
- The monitoring of air quality would be ensured.