

# Occupational Exposure to Asbestos and Gastrointestinal Cancer

Explanatory note for Operational Policy Manual (OPM)  
#16-02-11, *Gastrointestinal Cancer – Asbestos Exposure*

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## Introduction

The WSIB has updated Operational Policy Manual 16-02-11, Gastrointestinal Cancer-Asbestos Exposure (OPM 16-02-11, GI Cancer-Asbestos), which establishes initial entitlement guidelines for claims involving occupational exposure to asbestos and primary cancers of the esophagus, stomach, small intestine, colon and rectum.

Since asbestos-related gastrointestinal (GI) cancer was first recognized as an occupational disease by the WSIB in 1976, the initial entitlement guidelines in OPM 16-02-11, GI Cancer-Asbestos, have remained virtually unchanged. After nearly five decades, updating this policy was necessary not only to address the current scientific evidence on the association between occupational asbestos exposure and GI cancer, but also to enhance and modernize the policy's design and content, ensuring it better supports decision-making, workplace parties, and other stakeholders in the workplace insurance system.

The application of timely scientific evidence to support decision-making is a key pillar of the WSIB [Occupational Disease Strategy](#) (the Strategy). As part of this Strategy, the [Occupational Disease Policy Framework](#) (the Framework) guides the WSIB in recognizing new occupational diseases in regulation and policy, as well as updating existing policy guidance. This approach reflects the WSIB's commitment to an occupational disease policy process that is systematic, transparent, and informed by high-quality scientific evidence.

In 2021, as part of this ongoing effort, the WSIB pursued a new systematic review through its [Research and Grants Program](#). The resulting report, titled *Occupational Asbestos Exposure and Gastrointestinal Cancers: Systematic Review and Meta-analysis* (Asbestos-Related GI Cancer Review), was completed by a team of experts in January 2023 and underwent external peer-review.<sup>1</sup> Throughout 2023, the [WSIB Scientific Advisory Table on Occupational Disease](#) (the Table) assisted the WSIB Operational Policy Branch (OPB) in reviewing and understanding the findings of the Asbestos-Related GI Cancer Review and endorsed its use as the basis for updating policy.

The updated OPM 16-02-11, GI Cancer-Asbestos, will help streamline initial entitlement adjudication by providing clear policy guidance based on historical occupational asbestos exposure data unique to the province, including records across relevant Ontario industries and occupations, to support timely and consistent decisions. Leveraging this historical data has allowed a higher level of precision in the policy in defining what constitutes substantial occupational exposure to asbestos across industries, trades, occupations, and job activities.

The availability of this exposure data underscores the long-standing recognition of asbestos as a significant occupational health hazard and as one of the most extensively studied industrial

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<sup>1</sup> Koehoorn M, Demers PA, McLeod CB, Arrandale V, Davies HW, Dement J, Fan J, Pahwa M, Peters CE, Stayner L, Straif K. Occupational Asbestos Exposure and Gastrointestinal Cancers: Systematic Review and Meta-analysis - Report to the Workplace Safety and Insurance Board (WSIB) Ontario. January 31, 2023. Partnership for Work, Health and Safety. School of Population and Public Health, Faculty of Medicine, University of British Columbia.

carcinogens globally.<sup>2</sup> While the feasibility of this approach in other occupational disease policies – where such detailed exposure data may be lacking – remains to be seen, its inclusion in this policy was essential for adapting the broad, non-Ontario-specific findings from the Asbestos-Related GI Cancer Review to the unique industrial history of Ontario.

This policy also directly responds to feedback from both worker and employer stakeholders during the Framework consultation, who emphasized the importance of incorporating content from internal adjudicative advice documents into the policies that guide decision-making. This policy includes detailed guidance on exposures in various occupations and industries, demonstrating our commitment to increasing the transparency of information used in decision-making for workplace parties and other stakeholders.

The updated OPM 16-02-11, GI Cancer-Asbestos, aims to satisfy the WSIB's commitment to evidence-informed, timely, and transparent decision-making and will have the following benefits:

- support consistent decisions on entitlement to work-related GI cancers;
- provide clarity about the circumstances in which GI cancer will be considered a work-related occupational disease, in part, by using occupational asbestos exposure histories unique to the province; and
- allow entitlement for individual GI cancers where appropriate.

### **The Occupational Disease Policy Process**

Multifactorial diseases, such as cancers, present unique challenges to the workplace insurance system. These diseases often involve multiple risk factors, both occupational and non-occupational, and the related biological mechanisms are often not well understood. Long latency periods, sometimes spanning decades, add further complexity in establishing connections between occupational risk factors and disease outcomes. High-quality scientific evidence, at the population level, may be used to reliably support these connections. When the scientific evidence shows a higher risk of disease at greater levels of exposure, it can strengthen the case for such a connection.

At the individual level, an occupational disease policy uses this information to determine work-relatedness by assessing whether a worker's exposure occurred under conditions that sufficiently increased their risk of disease. The policy incorporates the scientific evidence where the level and/or duration of exposure, occupation, industry or process, and latency increased the risk of disease development. As such, the policy guides determinations of whether a worker's employment made a significant contribution to their disease. By doing so, it can expedite claim allowances and ensure affected workers and their survivors receive timely benefits.

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<sup>2</sup> Ontario Royal Commission. 1984. Report of the Royal Commission on matters of health and safety arising from the use of asbestos in Ontario; Volumes 1-3. Ontario Ministry of the Attorney General. Toronto, Ontario.

Effective occupational disease policies eliminate the repeated effort of gathering and analyzing scientific evidence to determine work-relatedness in individual claims. This is crucial because evidence-gathering and analysis are time-consuming and complex. However, our experience in updating OPM 16-02-11, GI Cancer-Asbestos, has shown that this benefit may only be fully realized when policy guidance aligns with any significant new scientific evidence as it emerges and when that evidence can be effectively adapted to the Ontario context.

The occupational disease policy process requires substantial time and effort. In this case, the process of updating OPM 16-02-11, GI Cancer-Asbestos, began in 2021. We believe the upfront investment in acquiring epidemiological and hygiene evidence yields substantial long-term benefits, including more predictable outcomes and a reduction in the time and resources needed to adjudicate future claims. The resulting efficiency, transparency, and consistency in decision-making from clear and relevant policy guidance benefit workplace parties and all stakeholders in the workplace insurance system.

Asbestos-related GI cancer has been recognized as an occupational disease by the WSIB for nearly 50 years and many claims have been adjudicated under the existing policy guidance. The objective was to update OPM 16-02-11, GI Cancer-Asbestos. Several factors played a role in this decision. Firstly, the scientific evidence used to inform the policy was 50 years old and several authoritative reviews, including the 2012 International Agency for Research on Cancer (IARC) Monograph and Institute for Occupational Medicine (IOM) 2006 report have been subsequently published with relevant findings for GI cancers. Secondly, to alleviate the adjudicative challenges of determining initial entitlement in a consistent and transparent manner. The existing policy did not specify the level and duration of asbestos exposure for initial entitlement and has resulted in inconsistent decision-making in both claims adjudication and at the Workplace Safety and Insurance Appeals Tribunal. Finally, an updated policy was needed to reflect the best available evidence for the association between occupational asbestos exposure and individual GI cancers.

The updated OPM 16-02-11, GI Cancer-Asbestos, provides clear direction using a leading systematic review of the current science as well as occupational asbestos exposure histories unique to the province including data across relevant Ontario industries and occupations.

## A brief background on asbestos use in Ontario

Asbestos has been long recognized as a serious occupational health hazard. It was one of the first substances to be regulated under the *Occupational Health and Safety Act* (OHSA).<sup>3</sup> The *Regulation respecting Asbestos*, Ontario Regulation 570/82, came into effect in 1982. This regulation instructed fixed place employers to take all necessary measures and procedures to ensure that the exposure of a worker to airborne asbestos is reduced to the lowest practical level and specified control limits. However, construction projects were excluded from its scope. After accepting the recommendations of the Royal Commission on Asbestos, the Ministry of Labour, Immigration, Training, and Skills Development (MLITSD) (formerly known as the

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<sup>3</sup> [A guide to the Regulation respecting Asbestos on Construction Projects and in Buildings and Repair Operations](#)

Ministry of Labour) introduced the *Regulation respecting Asbestos on Construction Projects and in Building and Repair Operations*, Ontario Regulation 654/85, which took effect in 1986. This regulation was later revoked and replaced by [Designated Substance – Asbestos on Construction Projects and in Building and Repair Operations](#), Ontario Regulation 278/05, in November 2005.

Asbestos is a group of naturally occurring, fibrous silicate minerals. The primary route of occupational exposure is through inhalation. Asbestos has been classified by IARC as Group 1, *carcinogenic to humans*, associated with pleural and peritoneal mesotheliomas, and lung cancer. The latest 2012 IARC review of Group 1 carcinogens reaffirmed this classification.

Historically, asbestos has been mined and used in a wide range of manufacturing processes in Ontario.<sup>4</sup> As discussed in the 1984 Report of the Royal Commission on Matters of Health and Safety Arising from the Use of Asbestos in Ontario (Royal Commission on Asbestos), one of the worst asbestos-related industrial disasters occurred at the Johns-Manville plant in Scarborough, Ontario. This facility produced asbestos-cement pipe using a mix of chrysotile and crocidolite between 1948 and 1980, and at times, also manufactured asbestos-cement board. Due to the long-latency period of asbestos-related diseases, the asbestos-related death toll from this facility continued to accrue long after workers at the facility had been exposed, with fatalities occurring 30 years or more after initial asbestos exposure.

Asbestos was also widely used as sprayed insulation material for fire protection and acoustical purposes, as well as in the insulation of pipes and boilers. As a result, asbestos is still present in many multi-storey buildings, including offices, schools, factories and air terminals. Today, asbestos exposure generally involves contact with older asbestos-containing products.

The manufacture, import, sale, and use of products containing asbestos has been prohibited in Canada since December 30, 2018.<sup>5</sup> Following this ban, trade decreased drastically.

For a more detailed account of the history of asbestos use in Ontario, please refer to the Royal Commission on Asbestos.<sup>6</sup>

## The policy's strong evidence base

The causal association between occupational asbestos exposure and GI cancers has been investigated in Ontario by different research bodies repeatedly over the last 50 years (e.g.,

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<sup>4</sup> Ontario Royal Commission. 1984. Report of the Royal Commission on matters of health and safety arising from the use of asbestos in Ontario; Volumes 1-3. Ontario Ministry of the Attorney General. Toronto, Ontario.

<sup>5</sup> Prohibition of Asbestos and Products Containing Asbestos Regulations (SOR/2018-196). [CEPA Registry - Canada.ca](#). The regulations do not apply to mining residues, except for in high-risk activities. Additional exemptions include the import, sale, or use of products containing asbestos to service equipment in nuclear facilities until 2022 and the import and use of asbestos for chlor-alkali facilities until 2029.

<sup>6</sup> Ontario Royal Commission. 1984. Report of the Royal Commission on matters of health and safety arising from the use of asbestos in Ontario; Volumes 1-3. Ontario Ministry of the Attorney General. Toronto, Ontario.

Royal Commission on Asbestos (1984), Industrial Disease Standards Panel (IDSP) (1988,1990)).

The body of scientific evidence and methodologies have now progressed to allow for the improved assessments of individual GI cancers and associated risk factors. This includes more recent studies with longer follow-up periods for long latency cancers and improved methods of asbestos exposure measurement. These scientific advances provided the rationale for the most recent, comprehensive, and expert-informed review of the risk of individual GI cancers associated with occupational asbestos exposure.

Furthermore, as recommended by the [Table](#), OPB collaborated with WSIB's Occupational Hygiene (OH) team to produce an assessment of the quantitative historical exposure data for relevant industries and occupations in Ontario. This was an innovative project to leverage the historical asbestos exposure records available in the province and available to the WSIB.

### **Asbestos-Related GI Cancer Review**

As part of the process of reviewing and considering updates to OPM 16-02-11, GI Cancer-Asbestos, the WSIB procured a systematic review and meta-analysis of the epidemiological evidence examining the association between occupational asbestos exposure and GI cancer, titled *Occupational Asbestos Exposure and Gastrointestinal Cancers: Systematic Review and Meta-analysis*.<sup>7</sup>

The key findings from the review revealed there was consistent evidence of a positive association between occupational exposure to asbestos and the risk of esophageal cancer, stomach cancer and colorectal cancer. The overall body of evidence supports a positive association between occupational asbestos exposure and esophageal cancer. Stronger evidence of this relationship was identified where there was better exposure assessment and increased confidence in the categorization of significant asbestos exposure in studies, including among the highest exposed workers; among workers with a history of significant exposure as a result of the nature of their work (e.g., asbestos-related insulation); and among workers in cohorts where there was also a two-fold or greater increased risk of asbestos-related lung cancer as a strong indicator of exposure.

The research team responsible for the Asbestos-Related GI Cancer Review included 11 investigators with expertise in occupational hygiene, exposure assessment, cancer epidemiology, and systematic review methods, and publications on occupational exposure to asbestos and/or occupational cancer risks. This includes team members who were involved in the IARC Monographs Program, the IOM panel, and part of an international group of experts in

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<sup>7</sup> Koehoorn M, Demers PA, McLeod CB, Arrandale V, Davies HW, Dement J, Fan J, Pahwa M, Peters CE, Stayner L, Straif K. Occupational Asbestos Exposure and Gastrointestinal Cancers: Systematic Review and Meta-analysis - Report to the Workplace Safety and Insurance Board (WSIB) Ontario. January 31, 2023. Partnership for Work, Health and Safety. School of Population and Public Health, Faculty of Medicine, University of British Columbia.

2014 that updated the Helsinki Criteria for Diagnosis and Attribution of Asbestos, Asbestosis and Cancer.<sup>8</sup>

The primary research question posed by the review was, “Does occupational asbestos exposure increase the risk of esophageal, stomach or colorectal cancer?” The search was restricted to cohort and case-control studies reporting a statistical association between occupational asbestos exposure and the risk of GI cancer. No limits were placed on publication year, country/region, or language.

This represents the most comprehensive review to date of the epidemiological evidence for occupational asbestos exposure and GI cancer. From the 192 studies included in the systematic review, the most informative risk estimates from 56 studies for esophageal cancer, 90 studies for stomach cancer, and 82 studies for colorectal cancer contributed independent effect estimates to the respective meta-analyses. The overall analysis included effect estimates from 16 new studies for esophageal cancer, 25 new studies for stomach cancer and 27 new studies for colorectal cancer published since the previous IARC 2012 authoritative evidence synthesis (i.e., including studies published from 2009-2022).

The overall meta-risk estimate (mREs) for occupational asbestos exposure (any/none) and the risk of GI cancer was 1.17 (95% CI 1.07-1.29) for esophageal cancer, 1.14 (95% CI 1.05-1.23) for stomach cancer, and 1.16 (95% CI 1.08-1.24) for colorectal cancer. Variability in the individual study risk estimates and confidence intervals was observed for all three cancer sites. However, the magnitude of the overall meta-risk estimates observed for any asbestos exposure and GI cancers were lower compared to risks observed for asbestos exposure and lung cancer.

Asbestos exposure subgroup analyses by occupation observed the highest elevated risks for esophageal (mRE=1.68 (95% CI 1.19-2.36)), stomach (mRE=1.53 (95% CI 0.93-2.51)) and colorectal cancer (mRE=1.59 (95% CI 1.14-2.23)) among asbestos insulators/insulation workers. Elevated meta-risk estimates were also observed for stomach cancer among asbestos miners (mREs=1.30 (95% CI 1.14-1.49)) and colorectal cancer among asbestos cement workers (mREs=1.21 (95% CI 1.06-1.38)).

Therefore, the highest risk of all three GI cancers was observed among insulators and insulating manufacturing workers. This finding further increases confidence in the establishment of this high-risk group for asbestos-related disease recognized by IARC. Elevated risks, of lower magnitude, were also observed for both cement workers and miners for all three GI cancer sites.

The difference in the meta-risk estimates for asbestos insulation versus cement and mining occupations may reflect the nature of the work and the potential for the release of fibres. Insulation work is more likely to disturb fibres causing them to become airborne compared to asbestos-cement work where fibres are more likely bound within the cement. Furthermore,

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<sup>8</sup> Finish Institute of Occupational Health. Asbestos, Asbestosis, and Cancer. Helsinki Criteria for Diagnosis and Attribution 2014. Editors: Panu Oksa, Henrik Wolff, Tapio Vehmas, Paula Pallasaho and Heikki Frilander. New Asbestos-Related Disease Entities. Helsinki.



mining and cement industries represent a mix of occupations with a wide range of exposure levels whereas insulation workers have more consistent high exposures.

Additional sub-group analyses were conducted among cohort studies that also investigated lung cancer. Increased meta-risk estimates for esophageal, stomach, and colorectal cancer were consistent and supportive of asbestos exposure among workers in cohorts where there was also a two-fold or greater risk of asbestos-related lung cancer. In other words, the asbestos exposure levels that doubled the risk of lung cancer also increased the risk of GI cancer.

Finally, in sub-group analyses of studies that reported an exposure-response relationship among workers with the highest asbestos exposures compared to those with the lowest exposures, there was consistency of increased meta-risk estimates for esophageal, stomach, and colorectal cancer.

Cancer of the small intestine was not included as a primary outcome of the review; however, the following results were shared in response to a supplemental question.

Nine studies (eight cohort and one case-control) with independent measures of association on occupational asbestos exposure and small bowel (intestine) cancers were identified by the systematic review. All study risk estimates were elevated with wide confidence intervals (CIs). The risk estimates (with CIs) ranged from 1.25 (95% CI 0.73-2.15) to 7.69 (95% CI 0.52-114.11)—the latter estimate based on one observed case, and most based on small case counts. A pooled meta-risk estimate of 2.64 (95% CI 1.51-4.62) for occupational asbestos exposure (any/none) and small bowel cancer was reported.

Synergistic or antagonistic effects of asbestos with other known risk factors for GI cancer, specifically smoking and alcohol were not investigated due to the lack of adequate data. The IARC summary of monographs identifies alcohol, tobacco/smoking and ionizing radiation as carcinogenic agents (sufficient evidence) for esophageal cancer; tobacco/smoking, ionizing radiation, rubber manufacturing and *Helicobacter pylori* infection as carcinogenic agents for stomach cancer; alcohol, tobacco/smoking, ionizing radiation, and processed meat consumption as carcinogenic agents for colon cancers; and alcohol, tobacco/smoking, and processed meat consumption as carcinogenic agents for rectum cancer.

The evidence was also insufficient and inconsistent with respect to the measurement and definition of latency<sup>9</sup> specific to any one GI cancer site to conduct a meta-analysis.

Overall, the systematic review of epidemiology studies found evidence of an increased risk of esophageal cancer, stomach cancer and colorectal cancer with occupational exposure to asbestos.

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<sup>9</sup> Koehoorn et al. define true latency as the period of time between when the cancer occurs (or is initiated) and when it is detected (diagnosis for incidence studies, death for mortality studies). For chronic diseases, such as cancer, it is not possible to directly measure true latency. Studies of occupational cancer often use latency defined as years since first exposure to cancer diagnosis; however, this includes both the time period that an exposure to a carcinogen has its effect (the induction period) and the latency period.

## **Occupational hygiene review**

To supplement the Asbestos-Related GI Cancer Review, the Table recommended the WSIB investigate the historical asbestos exposures of insulators and other trades and occupations. To address the Table's recommendation, and to further adapt the Asbestos-Related GI Cancer Review's findings to Ontario, the WSIB OH team conducted a review and assessment of the quantitative historical exposure data for asbestos insulator occupations as well as those occupations in manufacturing, construction, trades, and other occupations with comparable overall long-term average asbestos exposure levels. This review was completed by the OH team in July 2024.

The review of the quantitative exposure data was limited to asbestos exposures in the period before 1987. This timeframe pertains to the period before the coming into force of the *Regulation respecting Asbestos on Construction Projects and in Building and Repair Operations*, Ontario Regulation 654/85, made under OHSa. After this date, overall asbestos exposure levels among Ontario workers would have significantly declined.

The review included the following sources of quantitative asbestos exposure data:

- MLITSD (formerly Ministry of Labour) chest clinic files
- Select MLITSD employer health and safety files
- Peer-reviewed scientific literature
- 1984 Report of the Royal Commission on Asbestos Ontario
- National Institute for Occupational Safety and Health reports (prior to 1980)
- Available records submitted to WSIB by Ontario employers
- Grey or unpublished literature

In total, the review included approximately 1500 MLITSD chest clinic files and extracted and analyzed over 2400 individual asbestos exposure data points. An additional approximately 1500 individual asbestos exposure data points were extracted from 10 MLITSD employer health and safety files from the late 1970s to early 1980s.

This historical exposure review was used to develop policy guidance about specific Ontario industries, trades, and occupations, and time periods. If a worker's employment history falls within these parameters, decision-makers can consider the worker to have had substantial occupational exposure to asbestos. The aim of this guidance is to help decision-makers make timely and consistent initial entitlement decisions in claims involving occupational exposure to asbestos before 1987, especially when specific evidence of a worker's occupational exposure to asbestos may be challenging to obtain because of the passage of time. However, OPM 16-02-11, GI Cancer-Asbestos, is clear that specific evidence of a worker's exposure to asbestos will also be considered, where available. This approach is consistent with the WSIB's commitment to use the best available evidence when adjudicating claims.

## **Relevance of cumulative asbestos exposure estimates**

One of the challenges identified in the Asbestos-Related GI Cancer Review was the relatively few studies that included exposure-response analyses for GI cancer, with even fewer providing

directly comparable results with similar exposure categories. Additional sub-group analyses found risks of GI cancer were increased among workers where there was a two-fold or greater increased risk of asbestos-related lung cancer in the same cohort. A two-fold higher risk of asbestos-related lung cancer was defined as a strong indicator of significant asbestos exposure within the same cohort for an established exposure-response relationship. The asbestos exposure levels that doubled the risk of lung cancer also increased the risk of GI cancer. This correlation between lung cancer and GI cancer (i.e., stomach and colorectal cancer) was also reported in analyses conducted by IARC (2012).<sup>10</sup>

Doll (1955) put forth that a cumulative exposure of 25 fibre/mL-years can be associated with the first signs of clinical asbestosis.<sup>11</sup> In 1984, the Royal Commission on Asbestos reported that, based on their review of the available data, the lifetime occupational exposure to asbestos at which the fibrotic process cannot advance to the point of clinical manifestation of asbestosis was in the range of 25 fibre/mL-years and below. A cumulative asbestos exposure of 25 fiber/mL-years is also the level accepted as being associated with an approximate doubling of lung cancer risk relative to the nonexposed according to the Helsinki Group (1997).<sup>12</sup> The 1997 Helsinki Criteria provided a framework for determining attribution of asbestos-causation at the individual level for several conditions, including asbestosis, pleural disorders, mesothelioma, and lung cancer. A number of systematic reviews and meta-analyses conducted since that time have continued to support this approach based on a cumulative exposure of 25 fiber/mL-years for lung cancer as the basis for attribution.<sup>13,14,15</sup>

Given the correlation between the risks of lung cancer and GI cancers, the exposure-response evidence for asbestos-related lung cancer can serve as a reasonable proxy. A similar approach was taken by the Industrial Disease Standards Panel in their second report on asbestos (1990) when they argued that a comparable criterion for asbestos exposure in GI cancer could be based on the criteria for asbestos exposure for lung cancer.<sup>16</sup>

Combined with the result from the Asbestos-Related GI Cancer Review the magnitude of the overall meta-risk estimates observed for asbestos and GI cancer were lower compared to risks observed for asbestos exposure and lung cancer, a cumulative exposure threshold that was at

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<sup>10</sup> World Health Organization International Agency for Research on Cancer (IARC). Arsenic, Metals, Fibres and Dusts: IARC Monographs on the Evaluation of Carcinogen Risk to Humans. 2012: Volume 100C. Available at: <https://publications.iarc.fr/120>.

<sup>11</sup> Doll, R. Mortality from lung cancer in asbestos workers. *Br. J. Ind. Med.* 1955, 12, 81–86.

<sup>12</sup> Tossavainen, A. Asbestos, asbestosis, and cancer: The Helsinki criteria for diagnosis and attribution. *Scand. J. Work Environ. Health* 1997, 23, 311–316.

<sup>13</sup> Henderson OW, Rodelsperger K, Weitowitz HJ, Leigh J. After Helsinki: a multidisciplinary review of the relationship between asbestos exposure and lung cancer, with emphasis on studies published during 1997-2004. *Pathology* 2004;36(6):517-50.

<sup>14</sup> Berman DW, Crump KS. Update of potency factors for asbestos-related lung cancer and mesothelioma. *Crit Rev Toxicol* 2008b;38 Suppl 1:1-47.

<sup>15</sup> Berman DW, Crump KS. A meta-analysis of asbestos-related cancer risk that addresses fiber size and mineral type. *Crit Rev Toxicol* 2008;38 Suppl 1:49-73.

<sup>16</sup> Industrial Disease Standards Panel. (April 1990) IDSP Report #7. Second report to the Workers' Compensation Board on Certain Issues Arising from the Report of the Royal Commission of Asbestos. Toronto, Ontario.

least equivalent to that related to lung cancer development constitutes a reasonable approach. As a result, the definition of “substantial occupational exposure to asbestos” in OPM 16-02-11, GI Cancer-Asbestos, is based on the scientific evidence of asbestos exposure that doubles the risk of developing lung cancer, which is a cumulative amount of at least 25 fibre/mL-years.

The WSIB has funded a systematic review and meta-analysis of the scientific evidence of the exposure-response relationship between occupational asbestos exposure and the risk of lung cancers (excluding mesothelioma and pleural cancers). This systematic review is in progress and is expected to be completed in 2025. The updated OPM 16-02-11, GI Cancer-Asbestos, includes a caveat that if the science related to exposure-response for asbestos-related lung or GI cancer changes, the policy may be revised accordingly.

## **Initial entitlement under OPM 16-02-11, GI Cancer-Asbestos**

Gastrointestinal cancer in asbestos workers is accepted as an occupational disease under sections 2(1) and 15 of the *Workplace Safety and Insurance Act, 1997* (WSIA).

The policy’s key entitlement criteria are reviewed below. (To read the policy in its entirety, see OPM #16-02-11 Gastrointestinal Cancer – Asbestos Exposure)

### **The scope of coverage**

Gastrointestinal cancer – defined as cancers of the esophagus, stomach, small intestine, colon and rectum, resulting from exposure to asbestos in any process, trade, or occupation involving the application, handling, processing, use, remediation, or disturbance of asbestos is recognized as an occupational disease under the WSIA. Workers with asbestos-related GI cancer due to the nature of their employment, and their survivors, are entitled to benefits.

### **Overview of evidentiary requirements for initial entitlement in claims for asbestos-related GI cancer**

A worker will have initial entitlement to benefits for asbestos-related GI cancer if the decision-maker determines that the following evidentiary requirements have been met:

#### **a) The worker has or had a diagnosis of GI cancer.**

Various types of medical evidence can be used to support this diagnosis. The GI cancer diagnosis must be subsequent to the occupational asbestos exposure.

#### **b) The worker had substantial occupational exposure to asbestos.**

As previously mentioned, a quantitative exposure-response relationship for asbestos and GI cancer has not been established. However, results of the correlation between GI cancer and lung cancer support the use of asbestos-related lung cancer as a reasonable proxy. Therefore, substantial occupational exposure to asbestos is defined as a cumulative exposure of at least 25 fibre/mL-years as described for lung cancer. For more information on this threshold, see the section, titled “Relevance of cumulative asbestos exposure estimates” above.

### **Historical asbestos exposure in Ontario and GI cancer claim adjudication**

The tables in the policy are intended to inform and expedite the adjudication of GI cancer claims in the absence of specific individual exposure data. A worker whose employment history satisfies the specific conditions outlined in one of the entries in the tables will be considered to have had substantial occupational exposure to asbestos.

The strongest risk estimates for the development of GI cancer have consistently been observed among workers with a history of exposure as asbestos insulators. Therefore, the WSIB OH team conducted a historical exposure review to identify workers and trades with an overall average long-term asbestos exposure level comparable with that of asbestos insulators. This review was used to inform the tables in the policy.

In March of 1986, the *Regulation respecting Asbestos on Construction Projects and in Buildings and Repair Operations*, Ontario Regulation 654/85, made under the OSHA, came into force. Prior to this, there was limited awareness, control measures, and coherent regulatory frameworks for the control of asbestos exposure. Consequently, it is expected that occupational exposure to asbestos prior to the 1970-80s would be considered higher as compared to present-day occupational asbestos exposure.

Workers employed after 1986 are less likely to have had substantial occupational exposure to asbestos. However, elevated levels of occupational exposure to asbestos may still have occurred in cases where controls and protective measures were not adequately followed or where a worker's employment spanned both pre- and post-1986 periods.

Generally, the tables categorize job activities, occupations, and trades in Ontario (pre-1986) by sector and industry, employment period, and levels and duration of asbestos exposure. These levels range from high (i.e., average of 5 f/mL) to very high (i.e., average of 35 f/mL). The level of asbestos exposure dictates the duration of employment needed to reach a cumulative exposure of 25 fibre/mL-years, such as full-time 5 years at 5 f/mL or full-time 8 months at 35 f/mL.

### **Claims outside of the tables**

Claims that pertain to unlisted job activities, occupations, trades, or time periods, or that otherwise do not satisfy the specific conditions outlined in the table, must be assessed based on their individual facts and circumstances. This includes an occupational hygiene review of the worker's employment and exposure history to determine whether the worker had substantial occupational exposure to asbestos.

### **c) The latency period for the worker's diagnosis of GI cancer is biologically plausible with the date of the worker's first occupational exposure to asbestos or the start date of the first employment in which such exposure occurred.**

Latency periods for the development of a GI cancer may vary based on several factors, including the intensity, duration, and frequency of occupational exposures. Demers (2020) defined the "induction period" as when an exposure has its effect on increasing the risk of cancer; and "latency" as the time period between the induction period and the detection of

disease.<sup>17</sup> Furthermore, Demers (2020) recognized that while induction and latency periods are sometimes treated as a property of a disease, they are actually a property of the relationship between each exposure and the disease, and each exposure could have different effective time periods. Therefore, differences may occur in the time between when a contributing exposure occurs, and the disease is detected. The recognition of a biologically plausible range includes consideration of the complexities of the exposure (e.g., dose) and individual circumstances (e.g., age at exposure, non-occupational risk factors).

For workers with substantial occupational exposure to asbestos occurring before 1987, there is no issue concerning the biological plausibility of the latency period if there is a recent GI cancer diagnosis. However, for workers with more recent occupational exposure to asbestos, particularly within the last ten years, or where the time period between first exposure to asbestos and diagnosis is ten years or less, there would need to be a careful assessment of the worker's individual exposure circumstances preceding the diagnosis. This is especially true of very recent exposures or very short latency periods. If the time elapsed falls outside of the biologically plausible range, it is less likely that the occupational exposure significantly contributed to the development of the worker's GI cancer.

### **Claims failing to satisfy the evidentiary requirements for initial entitlement**

Claims that do not meet the policy's evidentiary requirements will be adjudicated on a case-by-case basis, with decision-makers considering the unique facts and circumstances of the claim. In other words, claims not meeting these evidentiary requirements will not automatically be denied. In all claims, the WSIB will consider and use the best available evidence, including any specific exposure evidence for the worker.

## **Retroactivity**

The policy will apply to previously decided asbestos-related GI cancer claims where initial entitlement was previously denied between April 19, 2021 and October 1, 2024, and where a referral to the Workplace Safety and Insurance Appeals Tribunal has not yet been filed.

The April 19, 2021 date was selected because it was the date that the WSIB initiated the research grant process which resulted in the report entitled, *Occupational Asbestos Exposure and Gastrointestinal Cancers: Systematic Review and Meta-analysis*. Using the start of the research grant process provides a fair and principled retroactivity cut-off for this policy and for similar policies in the future. It ensures that workers who had entitlement denied in their claims solely because of the time required to complete the occupational disease policy process are not unfairly disadvantaged. The decision not to extend retroactivity beyond this period maintains consistency and respects the finality of the decisions before this period.

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<sup>17</sup> Demers PA. Using Scientific Evidence and Principles to Help Determine the Work-Relatedness of Cancer. Final Report, January 9, 2020. Occupational Cancer Research Centre, Ontario Health.

## Policy application

This updated OPM 16-02-11, GI Cancer-Asbestos, applies to all decisions made on or after October 1, 2024, for all accidents.