

# Breathe Deep, Boys: Voices of the McIntyre Powder Project Miners

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## Abstract

Northern Ontario gold and uranium miners represent the largest cohort of industrial laborers who were historically exposed to daily nonconsensual industrial medical treatments involving the inhalation of finely ground aluminum dust known as McIntyre Powder. The daughter of one of those miners founded the McIntyre Powder Project in 2015 to document health issues in exposed miners, in an effort to determine whether her father's Parkinson's was related to aluminum inhalation. In response, 553 miners registered with the McIntyre Powder Project between 2015 and 2021 either directly or by their next-of-kin. This paper compiles their lived experiences of being subjected to McIntyre Powder, which contrasts starkly with the official narrative of the northern Ontario mining industry, which licensed its use globally. Additionally, this paper illuminates concerning industrial practices that emerged from the miners' disclosures, involving incentivized claims suppression, and raising serious questions about the effectiveness of medical screening and regulatory enforcement.

## Keywords

occupational health, aluminum, mining history, McIntyre Powder Project, human rights, occupational disease

## Introduction

“Our fathers never talked about work.”<sup>1</sup> So began a 2015 interview with a second-generation gold miner in Timmins, Ontario, Canada, at an annual pre-Christmas gathering of former Pamour Mine workers at a local bar. Both he and his father were among the more than 27,000 northern Ontario mine workers who were required by their employer to inhale finely ground aluminum dust known as McIntyre Powder (MP), used historically (1943-1979) by mining and silica dust-producing industries worldwide as a prophylaxis against the lung disease silicosis.<sup>2,3</sup> Some of the MP-exposed miners were born before the first World War, a few served in the Second, at least one started life in a concentration camp.<sup>4-6</sup> Many were immigrants to Canada from Italy, Czechoslovakia, Finland, Poland, Germany, Britain, Croatia, the Ukraine, and other primarily European nations. They survived conflict and knew hardships, and the characterization of them as stoic men who worked hard, seldom complained, and rarely spoke about the long hours spent underground is pointedly accurate. They talk like soldiers. They spend their workdays in a dangerous environment that is removed and foreign from the collective human experience, and they rely on one another to survive. They are conditioned to perform, produce, and not to question the orders of their superiors. They witness trauma and death, and those

who survive are bonded together by the impacts of their shared experiences and losses. They are brothers, and they don't leave one another behind.

It is on the basis of that brotherhood and duty to one another that, thirty-five years after the last canister of MP was administered, miners began to break their silence and speak about their time underground, their experiences with MP inhalation, and their ailing health. They did so in response to an appeal from a miner's daughter who was seeking answers about whether the Parkinson's disease that her father (Jim Hobbs) suffered from was linked to the MP inhalation that he was subjected to in the uranium mines of Elliot Lake, Ontario. Hobbs' daughter began researching and speaking with MP-exposed miners in 2014 and founded the McIntyre Powder Project (MPP) in 2015 as a voluntary registry to document the miners' health issues, mining history, and experiences with MP industrial treatments.

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The information provided by the MPP miners overwhelmingly repudiates the official narrative of the northern Ontario mining industry which continually—and in the face of contrary evidence—portrayed MP inhalation as safe and proven effective.<sup>2,7</sup> The lived experiences and health outcomes of the MPP miners confirm that aluminum inhalation treatments were involuntary (“you can’t escape it”),<sup>8</sup> coercive (“if you didn’t go in, they wouldn’t allow you to work”),<sup>9</sup> distributed indiscriminately (“we were all stuck in there”),<sup>10</sup> and without proper counsel (“I was not informed this would be happening”).<sup>11</sup> There was no regard for individual susceptibility. There was no opportunity for independent medical advice. The MP-exposed miners were trapped by economic need and they were at the mercy of their employers, who by and large treated their legitimate concerns and questions with the dismissive annoyance of a parent dealing with a pestering child.

In addition to their experiences with MP treatments, the stories collected through the MPP revealed broader concerns and key insights about industrial practices that significantly impacted worker health and safety and called into question the effectiveness of medical screening programs and regulatory policies and enforcement. This article compiles the common themes and revelations that emerged from interviews and oral and written descriptions collected from 553 MPP voluntary registry participants between April 2015 and October 2021. Nearly two-thirds of the information was collected directly from MP-exposed miners, while next-of-kin provided information in the case of deceased or incapacitated miners. The direct reports from MPP miners are relied upon to describe the miners’ experiences with MP treatments, working conditions, and broader industrial practices, and representative examples are provided from the statements of miners.<sup>a</sup>

## McIntyre Powder Inhalation

### *Mining Industry Narrative Versus Lived Experience*

“We don’t force a man to take it.”<sup>12</sup> Such were the words of William B. Dix, the President of the northern Ontario mining industry’s McIntyre Research Foundation (MRF) during a 1979 interview with the Canadian Broadcasting Corporation television program *The Fifth Estate*, referring to the widespread practice of exposing miners to MP inhalation treatments. Dix described the treatment procedure as follows: “When it’s exhausted into the atmosphere of a change house, it has the appearance of a mild fog, and the men spend about five or ten minutes in this when they’re changing there, when they’re getting into their mine clothes.”<sup>12</sup> Based upon that description alone, it is inconceivable that a mine worker—who is required to change into mining gear in a room filled with airborne aluminum powder—had any choice in the matter.

The descriptions of MP inhalation provided by every MPP miner were unanimous on the matter of choice. There was none. They described being involuntarily subjected to a black cloud of dust that caused coughing and chronic spitting up of black phlegm or blowing out black from their noses. They were told that it was good for them, that it would protect their lungs, and to breathe deeply. Questioning the practice garnered threats of job loss, and attempts at refusal were quashed with reprimands and disciplinary action, including suspensions.

“They herded us in there and closed the door and you had no choice.”<sup>13</sup>

“We were instructed to pass through this chamber in the dry area and breath[e] deeply so the dust would get into our lungs and protect us.”<sup>14</sup>

“At the time, we were forced to sit in a waiting corridor between the main building and the headframe as the dust was injected into the air.”<sup>15</sup>

“They used to make us sit there and they’d pop a capsule in the system and everything would turn black.”<sup>16</sup>

“The way they used to lock us in that room, there was no escaping it.”<sup>17</sup>

“They had a guy sitting at one door and you had to stay for 10 minutes—they would time you—and a guy sitting at the other door when you went out. If you left the mine dry before your 10 minutes was up, you would be sent back in for an additional 10 minutes.”<sup>18</sup>

“I asked the supervisor at McIntyre Mine about that dust and I was told that if I asked any more questions like that, I’d have to find another job.”<sup>19</sup>

“I breathed the dust in when I came on shift every day I worked there. I asked how come there was dust in the air. I was told it was to prevent silicosis of the lungs. I thought at the time it was ridiculous but needed a job, so I put up with it. I had bills to pay, so it was put up with it or starve. I think I received \$1.97 an hour at that time.”<sup>11</sup>

“We tried to complain about it, but they said if you don’t like it maybe you should find another job.”<sup>20</sup>

“If you got caught leaving the room, you’d get a two-day suspension. Back then, to keep our job, we had to do whatever they said.”<sup>21</sup>

“We were forced to. We were threatened. If you didn’t do it, you didn’t have a job.”<sup>22</sup>

“I’ll never forget it. I told the guy don’t spray it until we get out of here, but he did it anyway.”<sup>23</sup>

The personnel assigned to disperse MP daily (through puncturing MP-filled canisters attached to compressed air lines) varied from mine to mine, with some mines using supervisory staff, but more commonly summer students and surface workers who cleaned the mine dry were given the responsibility for this task. They, too, reported being uninformed about aluminum prophylaxis and uncomfortable with that aspect of their job. Of significant additional concern, some of the surface workers assigned to discharge MP canisters were former underground miners whose lungs were diseased from dust exposures, or in the case of uranium miners, whose radiation exposures were deemed too high to remain working underground. These health-compromised workers were removed from one toxic environment and placed into another, with increased levels of dust exposures from MP dispersals and clean-up.

### *No Information, Misinformation, and Consequences*

Unsurprisingly, the absence of full, transparent information about the benefits, risks, and efficacy of aluminum inhalation treatments had consequences. MPP miners generally reported that they were told that the aluminum dust would protect their lungs, but their understanding of what that meant was not always clear, as evidenced by some of their statements. Several miners did relate MP treatments to silica dust (“The theory that they told us is that’s going to coat your lungs and you’re going to spit out the silica that’s attached to it.”)<sup>24</sup> Others understood that it would protect them from other mining-related hazards, such as radiation (“They said it would keep down the radon daughters in the dry.”)<sup>25</sup> (“We were supposed to breathe that in so it would coat your lungs and the radon daughters wouldn’t stick to your lungs.”)<sup>26</sup>

This is extremely troubling, because these workers, believing that they were shielded from the consequences of toxic workplace exposures, were more apt to work in higher exposure conditions or without proper protective measures. Indeed, MPP miners made statements along with this line, indicating that they would go into more dangerous and dusty areas of the mines because they were told that MP would protect them. Some workers also spent extra time in the MP treatments, for the purpose of increasing their promised protection: “I’d go in early, thinking it was going to do me good, to coat my lungs.”<sup>27</sup>

The lack of access to complete information about MP treatments undoubtedly contributed to increased fear and uncertainty about what MP would do to the miners’ bodies and health. The psychological impacts and sensory confusion (both overload and deprivation) of being repeatedly trapped in a blackened, dust-filled room with dozens of others—while inhaling metal—are unknown, because those impacts were not studied. MRF documents describing the procedures for aluminum dispersals confirm that the mining executives responsible for aluminum prophylaxis were well aware of

the negative psychological burden on the workers: “If the powder is dispersed when men are present it is poor psychology. To some, the discharge is rather terrifying.”<sup>28</sup>

Despite a cultural code among miners to put up with adverse conditions without much complaint, feedback from the MPP miners indicates that they suffered psychological impacts from their experiences with MP inhalation. They repeatedly stated that they were used as guinea pigs. They expressed worry and concern for their health. They felt foolish and betrayed for having trusted the mining companies. Those whose jobs entailed dispersing the aluminum dust were apologetic and felt guilty, despite being ill-informed about MP themselves and being as trapped by their economic circumstances and assigned job duties as their fellow mine workers. Above all, the MPP miners expressed anger—anger that this happened to them, anger that they were tossed aside after MP treatments ended, anger that there was no official acknowledgment or accountability, and anger that they were experimented on against their will. Many MP-exposed miners wonder what will happen to them—when it will be their turn to get sick—and they expressed little to no faith that they will ever see justice or compensation. That basic desire for acknowledgment and compensation for what the MPP miners endured, irrespective of whether or not they go on to develop related health issues, was a common theme expressed by MPP voluntary registry participants, and their desire for acknowledgment is inextricably tied to the human rights abuses that were inherent in the MP industrial medical treatment program. Expressing his frustration that the mining industry took chances with his life by forcing him to breathe MP, one miner voiced: “I always felt violated because we were forced to, we had to. Those guys had no right to treat us like that. Who gives them the right to spin the barrel of the gun on me?”<sup>29</sup>

## **The System**

### *Injuries, Incentives, Health, and Safety*

“We got hurt quite bad sometimes, but you went into work and that’s the way it was”<sup>30</sup> is how one MPP miner described multiple examples from his personal experience and those of his mining coworkers who sustained injuries at work but who continued to go to work and frequently did not report their injuries through the workers’ compensation system. Workers and their families in northern Ontario mining communities can attest to the validity of these descriptions, and similar stories were shared repeatedly by MPP miners and their estates. It truly is “the way it was,” and miners spoke about it as a given, not a revelation. Contrast this with mining company reports and newsletters from the same era, featuring stories and photos boasting about health and safety achievements, particularly extended periods of no lost time from injuries.<sup>31,32</sup>

Reconciling the incongruence between these two versions of mine safety records—and how (at least some of) the safety milestones featured in photo-ops and inscribed on trophies were reached—necessitates a close look at the reasons why miners were going to work despite sustaining moderate to serious injuries. Those reasons reveal a pervasive and carefully crafted internal reward system for no lost time due to injuries, and employer-incentivized workers' compensation claims suppression. MPP miners formerly employed across a swath of mines in various northern Ontario mining communities reported very similar stories involving financial incentives to not report injuries or make compensation claims. Commonly used tactics included: pay bonuses for no lost time from injuries, payable to all workers but contingent upon not a single worker missing time at work due to injury; injured workers receiving full pay from the mining company for lost wages due to injury, contingent upon the injured worker not making a compensation claim; gifts for all workers upon the mine reaching a set number of hours of no lost time due to injury—the more hours reached, the more expensive the gift; and mine-sponsored community breakfasts or similar celebratory events in recognition of reaching certain reporting milestones.

The combination of these tactics created a self-sustaining system of injury and claims suppression that was often informally enforced by the workers themselves. No one wanted to be the person who ruined the company's safety record and had to face their disgruntled coworkers who had just lost out on their pay bonuses and safety rewards.

You'd bury your injuries. You'd bury anything. It wasn't about the pain you suffered. It was about the pain you were going to suffer if you made a claim. If you said a word about anything, you were the bad guy.<sup>13</sup>

In Ontario, the provincial board's workers' compensation premiums charged to employers are tied to the number of claims made by workers within industry classifications.<sup>33</sup> This sheds light on the underlying motivation of mining employers to institute incentivized claims suppression practices. MPP miners described being "preached at" by mine management not to make claims.

I got injured one time; I caught my neck on a piece of screen and got whiplash. Next day I woke up sore and I went to the hospital because I wanted an X-ray to get checked. When I went to work I got sent to Human Resources, and the Human Resources manager said to me "You shouldn't have done that. You should have come to work. You had no right to go to the doctor." The Human Resources guy, that was his job. To make sure you come to work. It didn't matter if you were injured.<sup>30</sup>

### *Physician Notes and Light Duty*

To give some perspective on the nature and severity of the injuries suffered by miners—injuries that were commonly subjected to claims suppression and nonreporting practices—it is important to consider their working conditions. Reported (and in some cases disturbingly common) injuries included broken bones, broken backs, severe lacerations, sprains, crush injuries, concussions, amputations, muscle tears, whiplash, and fume intoxication, among others. MPP miners described dusty and dangerous working conditions, with poor ventilation, thick diesel exhaust smoke, high radiation, toxic chemicals, ineffective or nonexistent personal protective gear, and faulty equipment.

Mining is the most unfriendly and unforgiving environment. They sent us in to do these jobs, knowing full well that we couldn't do them safe. You were climbing down hanging rods of shaft with three or four hundred feet of nothing below you.<sup>34</sup>

Something uncomfortable and highly concerning emerged from the disclosures of the MPP miners relating to the medical assessment of their injuries. They were often sent back to work on physician-prescribed "light duty" despite being unable to perform any work duties, and often counter-intuitive to ensuring that they got the rest needed for their healing and recovery. These actions, however, ensured that the mines reduced their reporting of lost time due to injuries. Although "light duty" could involve minor tasks on the surface, MPP miners more commonly described light duty as injured workers sitting in the first aid room or lunchroom and playing card games to pass the workday. MPP miners provided specific examples of incapacitated injured mine workers being taxied to and from the mine site daily at the mines' expense as part of the light-duty program, or in very severe cases, injured miners being paid full wages by the mine company to convalesce at home, provided that no compensation claim was made. To underscore the gravity of some of the injuries that resulted in light duty, the story of one MPP miner is particularly unsettling. He reported having two separate serious injuries while working in the mines, a back injury and a neck injury. On both occasions, he stated that he was sent back to work on light duty. He stated that a decade later, diagnostic imaging tests revealed that he had previously broken his neck and back.<sup>35</sup>

There were some immediate financial benefits to the injured workers who returned to work on light duty, including receiving full wages and safety bonuses for no lost time due to injury. Consequently, several of the MPP miners expressed that, at the time, they were okay with participating in the light-duty program. However, many of those same miners expressed later regret, as their injuries resulted in longer term health problems that they were unable to get recognized by the workers' compensation system, since there

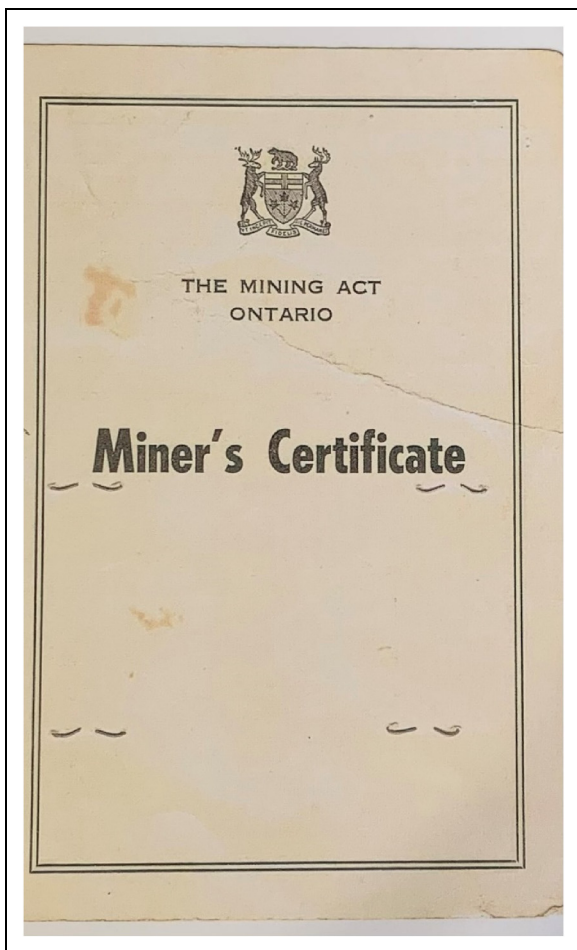
was no official record of their original injury. For example, one uranium miner reported being knocked unconscious from a twenty-foot fall down a raise<sup>b</sup> underground, landing with his heavy drilling equipment on top of him and resulting in a serious back injury. The mining company paid his full wages while he was off work, so no compensation claim was made. When he later suffered a recurrence and aggravation of the back injury in another workplace, he said that his compensation claim was denied, as there was no record of the original incident and injury. He commented that without such evidence, “you’re made out the fool and the liar.”<sup>21</sup>

In their disclosures regarding their experiences with the medical system in mining communities, MPP miners differentiated between two groups of physicians—those who were “for the worker,” and those who were “for the mine,” the latter known colloquially among the miners as “mine doctors,” irrespective of whether those physicians were actually employed by mining companies (most were not officially employed by the mines, although a few physicians were, and some maintained both family practice and were also

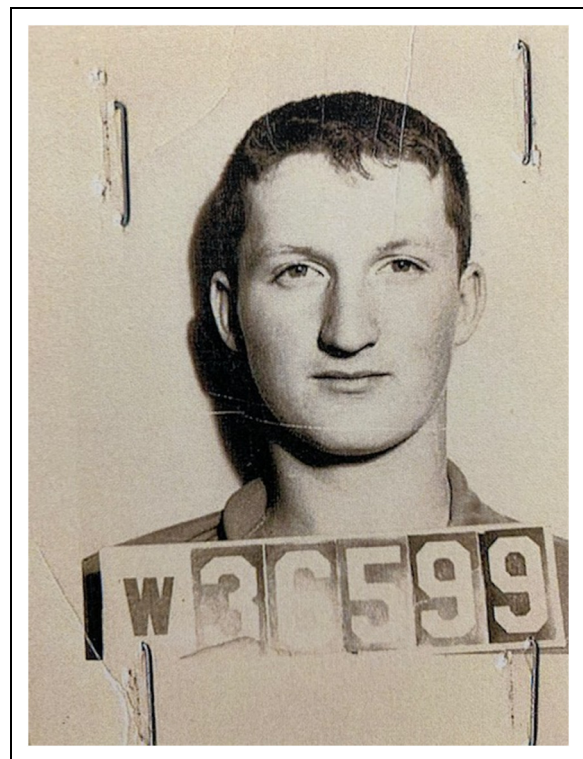
employed under contract to the mines).<sup>36–38</sup> In one particular northern Ontario mining community, miners and their survivors repeatedly reported that it was next-to-impossible to get a local physician to confirm a diagnosis of silicosis, and some traveled to southern Ontario for diagnosis, or were diagnosed at autopsy. Others died without an autopsy, and in the absence of a confirmed diagnosis, their families received no compensation.

### Medical Screening and Regulatory Oversight

Following the 1926 recognition of silicosis as a compensable industrial disease in Ontario, Canada, medical screening of Ontario miners soon became a mandatory requirement to check for radiographic evidence of lung disease.<sup>39</sup> Provincially administered chest X-ray clinics were set up in mining communities, and prospective underground miners were required to undergo a chest X-ray prior to being hired, and annually thereafter.<sup>39</sup> Miners were issued a Miner’s Certificate, about the size of a small greeting card, which contained the miner’s name, mine employed at, dates of mining employment, dates of chest X-rays, and a photo of the miner holding an assigned identification number which was linked to their chest X-ray records. The certificates acted as a passport of sorts, allowing miners to work underground so long as they passed their chest



**Figure 1.** The Mining Act of Ontario initial certificate card of McIntyre Powder Project (MPP) miner Hugh Carlson (printed with permission of Hugh Carlson).



**Figure 2.** The Mining Act of Ontario initial certificate photo of Hugh Carlson—28 Oct 1967 (printed with permission of Hugh Carlson).

X-rays. The miner's certificate cards later included a column to record whether the miner received MP treatments. (See Figures 1-3).

A centralized system of record keeping for these medical screening records was developed in 1951, compiled initially from existing miners' records held by mining companies that dated back to 1929.<sup>40</sup> That centralized system, known as the Mining Master File, continued until 1987, and is comprised of individual chest X-rays, mining employment data, MP exposure, and pulmonary function test (spirometry) records on approximately 90,000 Ontario mine workers.<sup>40</sup> Currently, the original Mining Master File records are in the custody of the Ontario Workplace Safety and Insurance Board, which administers the system of workers' compensation in Ontario, Canada.<sup>41</sup> The Mining Master File does not contain all of the available information from screening programs of Ontario miners. For example, due to the fact that uranium mines fall under federal jurisdiction, the Mining Master File does not include ionizing radiation exposure records of uranium miners, which are housed with the Government of Canada's National Dose Registry.<sup>42</sup>

MPP miners overwhelmingly reported that they were not given access to the results of their compulsory medical screening. They indicated that the mine was given their results, and that they themselves were told not to worry about it. In general, MPP miners expressed the belief that the screening programs did little to protect them. Specific examples were provided of miners who passed their miners' chest X-ray exams but soon after were found to have lung cancer or silicosis. One miner commented that "everybody passed" the chest X-ray exams, echoing a sentiment expressed by several others.<sup>19</sup> Another MPP miner stated that he failed his spirometry test and was given four puffers (medicated inhalers) by the mine doctor to enable him to pass—"they make you breathe until it's good."<sup>43</sup>

"As an underground miner we were forced to have a chest X-ray every year which changed to once every two years and if this was not done by a certain date you could not go to work. I asked the attendant when I would get the results and she informed me that if there was a problem they would let the mine know who in turn would let my doctor know and he would call me."<sup>14</sup>

"If you go for an X-ray, they won't tell you if you have silicosis anyway."<sup>44</sup>

"All those years we took X-rays in the mines, why didn't they tell us the results instead of just the mines? They could see that there was something wrong, but they didn't tell us. The doctors themselves, that was their oath, to help people, and I don't understand why they didn't do it."<sup>45</sup>

Concerns about the effectiveness of ionizing radiation monitoring in Elliot Lake uranium miners were similarly voiced by the MPP miners. Initially, ionizing radiation measurements were taken in various areas of uranium mines and then applied as an average estimate for all underground workers, regardless of what areas of the mine they worked in, and what their actual exposure levels were.<sup>46</sup> Beginning in 1981, individual dosimeter badges were implemented, worn by uranium mine workers to provide individual monitoring of gamma radiation exposure.<sup>47</sup> The MPP miners expressed considerable skepticism about the accuracy of the dosimeters, and a few engaged in unsanctioned "experiments" to test the ability of the dosimeters to take accurate readings. For example, one underground uranium miner said that he and his two-shift partners hung their newly issued dosimeters together in the mine heading for a full eight-hour shift, and then sent them away for reading, with the resulting radiation readings varying widely between the three dosimeters. Another miner stated that he placed his dosimeter badge in a 45-gallon drum of yellowcake (processed uranium) and left it for a week, then sent off his dosimeter for reading and it came back within normal limits.<sup>21</sup>

RECORD OF EMPLOYMENT OF HOLDER OF THIS CERTIFICATE  
(To be completed by employer)

MINE	(1) OCCUPATION	(2) ALUM. INUM	(3) DATES OF EMPLOYMENT AND SIGNATURE OF EMPLOYER
Dickenson	Miner Student	Yes	From 07/29/61 To July 22/68 <i>Hugh Carlson</i>
			From.....To.....
			From.....To.....
			From.....To.....
			From.....To.....
			From.....To.....
			From.....To.....
			From.....To.....
			From.....To.....
			From.....To.....

(1) AT WHICH HE WORKED MOST OF THE TIME.  
(2) POWDERED ALUMINUM ADMINISTERED - YES OR NO.  
(3) DATES TO INCLUDE TOTAL MONTHS EMPLOYED AT ALL OCCUPATIONS.

**Figure 3.** The Mining Act of Ontario initial certificate record of employment section, confirming Hugh Carlson's employment and McIntyre Powder (MP) aluminum treatments at Dickenson mine (printed with permission of Hugh Carlson).

Some Elliot Lake uranium miners spoke of being brought up from underground and reassigned to surface duties periodically, due to high personal radiation counts. A couple of them recalled being flown to Ottawa on a chartered plane with a group of other Elliot Lake miners for Canadian government studies, due to their extremely high ionizing radiation exposure counts.<sup>48,49</sup> A few miners with high radiation counts were no longer allowed to work underground, but more commonly, miners were brought up from underground for a limited period and then resumed their regular mining duties. This practice itself resulted in masking the true levels of ionizing radiation exposures, because the break from underground work lowered the miner's overall monthly average of radiation exposure levels, as explained by this former Elliot Lake miner:

I got pulled from underground because my radiation exposures were too high. They brought you to surface and I fooled around in the backyard so that I'd have zero exposure for several days, then they added those zero exposures to my over-exposures so it brought down your numbers for the month and they'd send you back underground. That's how they played the game. But it didn't change the fact that I was over-exposed to radiation for those days.<sup>30</sup>

The degree of transparency in the timely reporting of high levels of ionizing radiation that were historically present in Elliot Lake uranium mines is worrisome based on the contents of an October 30, 1961, memorandum found among archival records of the Ontario Mining Association. The subject matter of the memo is titled "Discussion between—W.E. Bawden, Dr L.B. Leppard, G.R. Yourt and John Beattie with Respect to Radiation," and it focuses on increased levels of ionizing radiation measured at Denison Mines.<sup>50</sup> The memo indicates an awareness on the part of the provincial government's health and mining departments about the high radiation levels at Denison Mines, but the response strategies focused on a plan to double-check the accuracy of the radiation measurements methods and sampling tools, and diversion of potential media inquiries:

The Department of Health is becoming quite concerned with the increase in the level of radioactivity in the mine workings of Denison Mines.

... It was agreed that the Department of Mines is not in a good position at the moment to make any comment for the Press on the level of radioactivity currently in Elliot Lake. It was suggested that Mr Yourt contact the local press and advise of the equipment used and the methods of sampling mine air for both dust and radioactivity. This may keep the press supplied with adequate material for the moment.<sup>50</sup>

In addition to medical screening and ionizing radiation exposure monitoring, the system of provincial and federal regulatory oversight for mine health and safety purposes involved a number of other measures, including dust sampling and government inspectors, who were mandated to conduct scheduled and surprise inspections.<sup>51,52</sup> However, MPP miners consistently reported their perception that management always knew when the mine inspectors were coming, offering as evidence several notable changes made by mine management to regular mine routines prior to the "surprise" inspections. These included the enforcement of safety protocols that were otherwise lax in favor of production, the shutdown of more dangerous areas of the mine, and clean-up of other hazards prior to inspections. The same was noted when politicians or other prominent visitors were given mine tours: "They would bring dignitaries down to the mines and they would have that place so clean, you could eat off the floor."<sup>34</sup>

## Commentary

The information disclosed by the MPP miners sharply brings into focus a marked disparity between the official/public portrayal of mining work conditions, the amount and types of mining-related injuries and illnesses that occurred (versus reported/compensated), and the levels of toxic exposures present in the work environment, as compared to what was actually experienced by the mine workers. The impacts of that disparity are profound, resulting in an underrecognition of injury and illness rates that could otherwise inform prevention efforts, and leaving workers and their families without compensation and adequate support. Failure to consider those impacts contributes to an ongoing cycle of willful blindness to what each generation of workers—particularly industrial laborers—endures on the job, and perpetuates the stymying of research interest and efforts to better understand and mitigate work-related illnesses.

Underpinning all of the systemic issues highlighted in the disclosures of the MPP miners was a paramount focus on production, coupled with vastly unequal power held by mining companies relative to their workforce. The miners were expected to drill, blast, and muck out their rounds<sup>c</sup> each shift, by whatever means necessary to meet the mines' production schedule. Based on the statements of the MPP miners, it was common knowledge that it was not possible for the workers to both fully adhere to safety requirements and also meet their assigned production targets—and it was their safety that was sacrificed.

"The round is the most important thing. You're not important to the company. The round is the most important."<sup>21</sup>

Until that changes, nothing else will.

## Epilogue

“All my friends I had in the mines are gone, they died.”<sup>24</sup>

The MPP miner who made that statement was only sixty-six years old at the time, and his words resonated with the types of health outcomes compiled in the MPP voluntary registry.<sup>2</sup> Fifty MPP miners have died since registering with the MPP, five of whom are quoted in this article. The northern Ontario miners who came forward with their stories frequently expressed an acceptance of their own fate, but they simultaneously expressed concern for the work environments that their grandchildren will encounter, and a desire to help other workers by sharing their own stories. The evidence presented by the MPP miners demonstrates that, in order to disrupt the cycle of work-related harm going unrecognized, we cannot solely rely on official measures of working conditions, toxic exposures, and related injuries and illnesses. We must proactively seek out and speak to workers in real time, rather than retrospectively after the harm is done, in order to properly identify the true extent of work-related hazards and health and safety risks—and honor the lives and legacies of those who died, by making substantive changes in the work environments awaiting their grandchildren.

## Acknowledgments

With deep gratitude, the authors thank the miners and mining families for coming forward with their stories. You provided a vivid picture of life in the mining industry and of the devastating consequences of industrial practices that were designed to maximize industry profits at the cost of your health and well-being. The authors hope that you see your life histories reflected in the telling of your stories and that your courage and concern for the health and safety of others results in meaningful changes to occupational health and safety, and overdue reform of the workers' compensation system. The authors would additionally like to acknowledge the efforts of all others whose work has contributed toward positive changes in occupational disease recognition and reform.

## Declaration of Conflicting Interests

The author(s) declared the following potential conflicts of interest with respect to the research, authorship, and/or publication of this article: Janice Martell is the founder of the McIntyre Powder Project. She is employed by the Occupational Health Clinics for Ontario Workers, Inc. (OHCOW) and is the daughter of a McIntyre Powder-exposed miner. Tee Guidotti completed previous independent consultation work for OHCOW.

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## Notes

- a. To protect the identity of the MPP miners, their MPP voluntary registry identification numbers are used in References section instead of their names. Direct quotes and individual stories are provided with permission of the miners or their estates.
- b. A raise is a vertical or inclined shaft between mine levels, or from the surface to the mine.
- c. In mining, a round is the ground removed in a planned drill pattern.

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### Author Biographies

**Janice Martell** is an occupational health coordinator with the Occupational Health Clinics for Ontario Workers, Inc. (OHCOW), working as part of a multidisciplinary team focused on occupational disease clusters among Ontario workers. In 2015, she founded the McIntyre Powder Project to document health issues in underground miners who, like her father, were subjected to mandatory aluminum dust inhalation as a condition of employment, under an historical silicosis prevention program. Her mapping and mobilizing efforts led to formal research that found a link between Parkinson's and McIntyre Powder exposure.

**Tee Lamont Guidotti** is a retired professor of occupational and environmental medicine who remains active in teaching and research and as a consultant to OHCOW. He has held senior positions at several universities, including the University of Alberta and the George Washington University in Washington DC. He has published a number of books, including *Global Occupational Health, Health and Sustainability*, and most recently, *Handbook of Occupational and Environmental Medicine*. He is best known for his work on the occupational health of firefighters and energy workers.