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Article abstract

Uranium miners in Elliot Lake went on a wildcat strike in 1974 to protest their occupational health concerns on the job after a spike in cancer cases. They learned that the provincial government had known of the poor working conditions causing their illnesses, but had not informed them of the dangers or acted to improve their situation. As a result of union and political pressure, the Ontario government created the Ham Commission to investigate and make recommendations. Its hearings revealed the industry's scandalous conditions, and its report eventually resulted in the Ontario Health and Safety (ohs) Act in Ontario. It did not cover the miners until 1984, so they worked through their internal health and safety committees to gain improvements in the work environment. Others have discussed this situation in relation to the emergence of the ohs and environmental movements. This paper discusses the events in terms of the mine owners' attitudes towards their employees, the industry's relationship to governments, and the impact of the uranium mining industry (part of the nuclear industry) on the local community and environment.

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ARTICLE

The Elliot Lake Uranium Miners' Battle to Gain Occupational Health and Safety Improvements, 1950–1980

Laurel Sefton MacDowell

The 1974 Wildcat Strike

ON 18 APRIL 1974 ELLIOT LAKE uranium miners at Denison Mines staged a wildcat strike and picketed to protest their unhealthy working conditions. When an Ontario Ministry of Health study was presented to an international symposium in Bordeaux France on the hazards of mining uranium, two union representatives attended the conference and learned that the miners' cancer rates were unusually high. Many had died prematurely from uranium-related cancers because their exposure to radiation was over the permitted level. Another paper presented by Dr. E. Mastromatteo, director of occupational health in Ontario, at a conference in San Francisco revealed that 80 Elliot Lake workers who had worked in the mines for different lengths of time had developed radiological pneumoconiosis.¹ The Canadian and Ontario governments knew these facts but did not inform the miners. In their close relations with the uranium mining companies, they gave precedence to industry profits over protecting employees' health and safety.

Throughout the 1960s union pressure had been mounting over miners' occupational health problems.² In November 1973, the miners' union, the United

1. Archives of Ontario (hereafter AO), Ontario Mining Association Papers, F1352, F1352-2-0-8, B244378, Julian Hayashi, *Free Press* (London), 17 January 1975. (Hereafter press reports come from these archival files.)

2. Brief to the Royal Commission on the Health and Safety of Workers in Mines in Ontario, *A History of Steelworkers' Action For Occupational Health in Ontario*, January 1976, 27–28, Centre for Industrial Relations and Human Resources Library, University of Toronto (hereafter

Steelworkers (USW), met with Stephen Lewis, provincial New Democratic Party (NDP) leader, to discuss the hazards of uranium mining and the Workmen's Compensation Board's (WCB) inadequate response to sick miners. It also met with the ministers of health and natural resources to express its "grave concern" that many members had silicosis and also had "developed lung cancer from exposure to silica dust and radiation in the mines." Government agencies were indifferent when the union first requested proper medical examinations of miners and information about the mines' air quality. Nevertheless it again asked the government to survey the mines' air quality and send specialists to Elliot Lake to give each miner a thorough medical examination. The ministers promised to investigate the situation and report back.³

The wildcat strike led the Ontario government to establish the *Royal Commission on the Health and Safety of Workers in Mines* (the Ham Commission); it resulted in the introduction of occupational health and safety (OHS) legislation in Ontario in 1978 and was influenced by the growing anti-nuclear and environmental movements in the province.⁴ A substantial literature exists on the OHS hazards of mining and attempts to regulate them.⁵ This article focuses on the uranium mining industry's approach to occupational health and safety before the Ham Commission and on the effects the industry had on the lives of mining employees in Elliot Lake, who experienced daily hazards in the workplace from uranium mining. It does not discuss the parallel negative health effects of uranium mining on the town and the industry's toxic environmental legacy, except to note that during the 1974 OHS crisis in the mines, concern increased about the effects of hazardous waste on the community's environment.⁶

By 1973, sixteen years after the Elliot Lake mines opened, union staff rep Andy Lavoie noted "an increasing number of miners in Elliot Lake who are starting to show the effects of dust in their lungs. When we consider that there is also radiation exposure involved this could lead to a very dangerous situation." As early as 1959 the union sought information about "the hazards of uranium mining and radiation," and in 1960 it began to organize local health

Steelworkers' Brief, 1976).

3. NAC, USW Papers, vol. 80, *Elliot Lake Miners' Voice*, 5, 10, November 1973.

4. Robert Storey, "From the Environment to the Workplace ...and Back Again? Occupational Health and Safety Activism, 1970s–2000+," *Canadian Review of Sociology and Anthropology*, 41, 4 (November 2004), 419–447.

5. Lloyd Tataryn, *Dying For a Living* (Montreal 1979); Doug Smith, *Consulted To Death: How Canada's Workplace Health and Safety System Fails Workers* (Winnipeg 2000); Michael A. Amundson, *Yellowcake Towns: Uranium Mining Communities in the American West* (Boulder, Colorado 2002).

6. Laurel Sefton MacDowell, "The Environmental Effects of Uranium Mining on the Elliot Lake Area 1955–2004," Paper presented to the American Society for Environmental History, Phoenix, Arizona, April 2011.

and safety committees in every workplace, attempting to get them recognized in collective agreements. In 1961 workers at Milliken mine in Elliot Lake wanted the results of radiation and dust control tests reported to the union, yet the USW did not receive information on dust levels until 1975, and data on radiation continued to be withheld. In 1965, the USW told the government that the existing annual x-ray and medical examinations were inadequate. Eight years later, in 1973, it repeated demands for medical exams with "the results made known to the individual;" surface jobs for those with silicosis so they could maintain their income and lower their exposure to radiation; and legislation to minimize or eliminate hazards.⁷ Without medical information from the companies or government, the union surveyed its members in 1973 and asked them to report any silicosis or cancer cases. To prepare for more meetings with political leaders, it announced in the local union paper *Miners' Voice*, "we want to know *exactly* how many men in the Elliot Lake area are suffering from silicosis" and information about miners who had died of lung cancer so that on behalf of the families it could investigate and make compensation claims to the WCB.⁸

As the number of sick miners increased quickly, the 14-day walkout in 1974 prompted action. Immediately the company permitted workers to change their facemask filters once a day instead of once a week. Under pressure, it granted a 15 cent an hour increase in the cost of living allowance, which the union had sought for months. As Leo Bernier, minister of natural resources, refused to meet a delegation of 20 Elliot Lake miners, NDP MPP Eli Martel demanded action as "the workmen in the Elliot Lake area have been trying to have their working conditions improved for the past 16 years."⁹ The government did an air quality survey, which the miners contested as some areas were not tested, and the company had reduced chute blasts to lower dust levels just before the survey. After the survey, the company installed more ventilation doors.

The outbreak of lung cancer and the companies' inadequate response to the union's concerns led one miner to conclude at an OHS committee meeting that the Elliot Lake mines had the "worst underground conditions in Canada."¹⁰ In 1975, the USW again pressed safety and health concerns in negotiations, while the NDP federal convention passed a resolution in support of the uranium miners: more than 40 miners had died of lung cancer, and over 400 suffered the effects of unsafe working conditions; the province and the companies had

7. Steelworkers' Brief, 1976, 4, 14, 9, 27; NAC, USW Papers, vol. 80, *Elliot Lake Miners' Voice*, 5, 3, March 1973.

8. NAC, USW Papers, vol. 80, *Elliot Lake Miners' Voice*, 5, 10, November 1973.

9. NAC, USW Papers, vol. 80, *Elliot Lake Miners' Voice*, 1, 1, June 1974.

10. NAC, USW Papers, vol. 80, File 20, *Uranium Miners' Voice*, 6, 3, September 1974; 1, 2, July 1974.

hidden information from the workers; and the federal government had abdicated its responsibility for OHS in the uranium industry.¹¹

The Uranium Mining Industry

Mining has always had a high level of accidents compared to other industries. In the 20th century more was learned about miners' diseases. Miners themselves were aware of the dangers of mining and through their unions sought accident and health plans to take care of them and their families.¹² Historically, mining companies approached the problem from the perspective of liability, "took scant responsibility for their workers' welfare," and sought control of health care by hiring company doctors. They often made the miners pay for such services through payroll deductions. Some unions like the Western Federation of Miners and the United Mine Workers countered employer control with their own health programs, but such programs faltered when the unions were defeated.¹³

The uranium industry was a relatively recent type of mining and was created in special, politicized circumstances that gave the industry close ties to government. But in its methods of mining and waste disposal, treatment of its employees, and in the limited government regulatory approaches, uranium mines were treated no differently from other mines. This was unfortunate because of radiation; uranium mining and its waste was very dangerous to miners and to those living near the mines.

Uranium in Canada was discovered in 1900 and first mined in the 1930s. It was an important industry during World War II as production serviced the Manhattan Project in making the first atomic bomb in the United States. In 1952, Franc Joublin staked uranium ore near Elliot Lake, Ontario, "the biggest motherlode in the free world," estimated to contain one quarter of the world's supply. After the war, Canada agreed to supply the Americans with 1.5 billion dollars' worth of uranium oxide, two-thirds of which came from Elliot Lake. The mining activity led the Ontario government in 1954 to "plan and establish a local community to serve the mining industry." To meet target dates, "in a frantic crash program" lasting four years (1955–58), 12 mines, 11 with mills, were brought into production "at breakneck speed."¹⁴

The town mushroomed on the site of a past Anishinabe village, with 2000 modern, suburban homes, schools, two movie theatres, three hotels, and 500 apartments to meet the needs of the new population. All levels of government

11. NAC, USW Papers, vol. 80, File 20, *Uranium Miners' Voice*, 2, 2, July 1975.

12. Alan Derickson, *Black Lung: Anatomy of a Public Health Disaster* (Ithaca, New York 1998).

13. Elizabeth Jameson, *All That Glitters: Class Conflict and Community in Cripple Creek* (Chicago 1998), 72, 90, 201.

14. L. Carson Brown, "Elliot Lake: The World's Uranium Capital," *Canadian Geographical Journal*, 75, 4 (October 1967), 124–127.

spent millions of dollars on municipal infrastructure and services, highways, and in mortgage guarantees. The mining companies' housing program had 1600 houses, about a third of the number needed; the corporations bought the lots, arranged the mortgages with banks, and guaranteed the loans jointly with Canada Mortgage and Housing so a miner could get an \$11,265 home for as little as \$563 down. Others lived in trailer camps.¹⁵ Elliot Lake had no elected municipal council until 1966; the 12 companies, which by the 1970s consolidated into two, controlled employment, much of the housing, and medical facilities. The trade-off for workers – good wages and cheap housing for loss of personal control and corporate paternalism – was the essence of a “company town.” Throughout the boom and bust years that characterized uranium mining, Elliot Lake was isolated and dependant on the mining industry and government decisions. Unions were the only countervailing factor to corporate interests. The usw learned it was important to communicate with the public because often the union provided the only voice to offset the companies' “domination of public opinion.” To achieve better OHS policies, the union understood it needed local and broader public support.¹⁶

In 1959 Elliot Lake's population grew to 25,000 people as 10,500 miners produced at its peak more than 12,000 tonnes of uranium from nineteen mills (eleven in Elliot Lake) worth 331 million dollars. In 1958, the companies made 200 million dollars, and in 1959 Elliot Lake mines produced 74 per cent of Canada's uranium oxide. Despite their wealth, the companies simply dumped their waste into lakes near their mills, with government acquiescence.¹⁷

After World War II, military and civilian demand for uranium contributed to the boom and bust quality of the uranium mining industry: from 1956 to 1962 production soared, then dipped until 1978, with renewal from 1978 to 1992, and then a shutdown in 1996. The Cold War contributed to the first boom in Elliot Lake. With the growth of atomic technology in the United States, the Russians' successful test of its atomic bomb in 1949, and the Korean War (1950–53), the Cold War escalated, and competition for uranium increased, leading to Elliot Lake's speedy development. The sense of urgency resulted in rapid production, which worsened mines' OHS standards. By 1962, new ventilation techniques, lower dust levels, annual chest x-rays, and continuous union pressure had lowered silicosis levels in Ontario's overall mining population to

15. Alan Phillips, “Elliot Lake Uranium Mining History – Our Wild Atomic City,” *Maclean's Magazine*, 25 May 1957, <<http://www.republicofmining.com/2010/09/13/our-wild-atomic-city---here's-a-graphic-picture-of-ontario's-elliott-lake---by-alan-phillips-originally-published-in-macleans-magazine---may-25-1957/>>(13 September 2010).

16. Steelworkers' Brief, 1976, 30.

17. Ontario, Report for Ministry of Natural Resources, Mineral Policy Background Paper #13, O.J.C. Punnalls “Ontario's Uranium Mining Industry –Past, Present Future,” January 1981, 4; Brown, “Elliot Lake,” 126–130; Loraine Rekmans, Keith Lewis, Anabel Dwyer, *This is My Homeland: Stories of the Effects of Nuclear Industries by People of the Serpent River First Nation* (Cutler, Ontario 2003), xv; Amundson, *Yellowcake Towns*, 37.

1 per 1000. But a Denison Mines executive later told the Ham Commission that in Elliot Lake “crash mining followed on the heels of crash construction” and ideal safety standards were not present. Supervisors were unfamiliar with the underground geography; many miners were non-English speaking immigrants and both factors meant the industry was able to avoid responsibilities.¹⁸

When eleven mines opened in Elliot Lake in 1958, the United Steelworkers’ and the International Union of Mine Mill and Smelter Workers (Mine Mill) were engaged in a fierce rivalry to organize miners. The Canadian Congress of Labour, and from 1956 the Canadian Labour Congress (CLC), had given the USW jurisdiction over mining following its expulsion of Mine Mill in 1949 for being communist-led.¹⁹ The legendary rivalry between the two unions throughout the 1950s and early 1960s resulted in conflicts in organizing drives in Sudbury, Timmins, and Port Colborne in Ontario; Thompson, Manitoba; Trail, B.C.; and, briefly, in Elliot Lake. Finally, in 1967 the two unions merged. In Elliot Lake, the USW organized Pronto and Algom mines first and won a large wage increase for miners in 1958, which helped its campaign. Mine Mill won the large Denison Mine briefly, but in a rematch the USW was certified. By 1960, the USW represented all Elliot Lake uranium mines and the issue of union representation was settled.²⁰

A spike in accidents in the new uranium mines, with ten fatalities in 1957 and fifteen in 1958, led to a Special Committee on Mining Practices at Elliot Lake, to which both unions made submissions. The Committee’s 1959 report noted that Elliot Lake was converted in five years from an isolated part of Ontario’s northland “to a thriving mining community of 28000.” With contracts in place, the pressure to produce resulted in the “heaviest concentration of shaft-sinking ever seen in Canadian mining in an equal period of time” with 19 shafts on 11 properties involving excavation, landscape change, and removal of tons of rock.²¹ Elliot Lake’s uranium mine production was critically important for the province. It accounted for 23 per cent of all mining activity in Ontario, a daily tonnage of 18 per cent of all mines with a dollar value of output at 25 per cent of all mineral production.

18. *Free Press*, 28 May 1975; 17 January 1975.

19. The unions’ ideological rivalry was partly the result of the Cold War, but in Canada it also resulted from bitter competition throughout the 1930s and 1940s between the communists (CPC) and social democrats (CCF).

20. Irving Abella, *Nationalism, Communism and Canadian Labour: the CIO, the Communist Party and the Canadian Congress of Labour, 1935–1956* (Toronto 1973), 109; John B. Lang, “A Lion in a Den of Daniels: A History of the IUMMSW in Sudbury Ontario, 1942–62,” MA thesis, University of Guelph, 1970; Gilbert H. Gilchrist, *As Strong As Steel* (Sudbury 1999), 17; NAC, USW Papers, MG281268, vol.54, File: Elliot Lake – Denison Mine Ltd. – Organizing Campaign handbills 1958–1959; Phillips, “Elliot Lake Uranium Mining,” *Maclean’s*.

21. NAC, USW Papers, vol. 71, Report of Special Committee on Mining Practices at Elliot Lake, Part 1 – Accidents and Related Representations 1959 (hereafter 1959 Report), Bulletin 155, Ontario Dept. of Mines, 3, 4.

Though the report focused on ground support and underground transportation, its recommendations indicated its awareness of special conditions in uranium mining that required better research. It recommended that the Department of Mines publish international changes in the maximum permissible concentrations suggested for radon and its daughter products, trends in radiation and dust counts, and it suggested companies should pay attention to “the working range and concentration of diesel equipment in relation to air volumes” and “the frequency of dust and radiation surveys.”²²

The report nevertheless supported management’s right to make OHS decisions. It recognized that companies and unions could cooperate on such issues and thereby improve safety records but understood that the extent of cooperation was a matter of opinion or negotiation. It did not propose legislation at that time even though it criticized certain management actions and recommended changes. Instead it backed the industry’s position that it alone was responsible for safety and the union’s role was purely advisory. It noted that safety directors in Elliot Lake’s mines had varying, sometimes limited responsibility; safety inspectors had less influence than was necessary; most mines combined the safety and ventilation departments, which was inadvisable; and that the induction procedure for new miners was perfunctory and inadequate, particularly as these mines faced problems that were new to many miners. It advocated new training programs because incorrect working methods and insufficient knowledge of unsafe conditions contributed to the high number of accidents. One recommendation was for safety glasses, as compensable eye injuries made up five per cent of the WCB cases. Twenty per cent of accidents occurred from rock falls because companies, for reasons of cost, had installed too little rock bolting, which was not inspected sufficiently in Elliot Lake mines. Hauling accidents using mobile equipment could be eliminated with the establishment of haulways, by upgrading shuttle cars with rubber tires, lights and sirens, and with regular maintenance to avoid brake failures. The report left the impression that the companies consistently put costs ahead of their employees’ well-being.²³

The Radiation Factor

URANIUM MINING INVOLVES THE HARD WORK, dangers, and environmental disruption of all mining, but in addition it exposes the miners, their communities, and the environment to radiation, which is carcinogenic. The government and industry had some knowledge of radiation, but it did not prompt them to take different approaches to safety from other types of mining. The 1959 report on mining practices did note that silicosis and radiation were hazards and ventilation was very important. Any dust underground was undesirable, but

22. 1959 Report, 51. See note 25 for definition of radon daughters.

23. 1959 Report, 33–34, 37–41, 46–50, 57.

tolerable limits of exposure to silicotic rock based on medical research were known. The report recognized that inhaling heavy concentrations of radon was serious, but noted that radiation was a newer problem with which the companies had little experience. Some studies suggested that limited exposure offered “a margin of safety” against injury from radiation. It mentioned that the International Commission on Radiological Protection (ICRP) had set levels of maximum exposure, with which it claimed the Elliot Lakes mines were in accordance; it recommended that the Department of Mines keep up to date on such matters and publicize the information.²⁴

Then in 1959 the ICRP set a new standard at a lower level above which a person should not be exposed to radiation; the acceptable international level was lowered continuously as more was learned about the effects of radiation. In 1967, the United States established its own higher radiation exposure standard compared to the international level, but its secretary of labor also tightened the permissible levels of radiation exposure for Colorado miners. Not until 1974 was the Canadian standard set, and it was at the higher American level.²⁵

Though provinces are responsible for occupational health and safety, Ontario had no regulations for uranium mines. In 1960 the federal Atomic Energy Control Board (AECB) enacted its own radiological regulations, which the province was supposed to enforce. But the federal agency did not seek reports from the Ontario government, which allowed the industry to measure its own silica dust and radiation levels and essentially police itself.²⁶

From the beginning a union was a party in the industry, and both Mine Mill and the USW were concerned about OHS problems, the effects of mining on the employees, and the impact of radiation on the broader community. Mine Mill, as a successor to the Western Federation of Miners, articulated the potential danger of radiation publicly before the USW. In 1957, its executive board report to its convention wanted a study of the “effects of radiation in uranium mining” because little as yet was known; it was important “because of the growing numbers of workers involved.” The American government had studied lung cancer in its uranium mining industry and “by 1957 the U.S. Public Health Service was publicly predicting an epidemic of lung cancer among uranium miners unless radiation levels were reduced.” Mine Mill wanted governments in Canada to examine health hazards in the uranium

24. 1959 Report, 51–53.

25. Steelworkers' Brief, 1976, 2; Tataryn, *Dying For a Living*, 85, 88, 92–93, 95, 99. The ICRP recommended an exposure standard of 3.6 WLMS (working level month) per year instead of the previous 12 WLM standard. A WLM is one working level of radon daughters for 170 hours. Radon daughters are short-lived decay products of radon that miners inhale. The Canadian level remained at 12 WLM until 1972, was reduced to 8 WLMS, then in 1973 to 6 WLMS and in 1974 to 4 WLMS (the U.S. standard) because the cancer deaths among uranium miners were high.

26. Lloyd Tataryn, “The Tortured Future of Elliot Lake,” *Saturday Night*, June 1976, <<http://www.republicofmining.com/2011/03/28/the-tortured-future-of-elliott-lake-%E2%80%93-by-lloyd-tataryn-saturday-night-june-1976/>> (28 March 2011).

mining industry.²⁷ Mine Mill's brief to the 1958 Commission favoured joint responsibility for health and safety policy. Uranium was a new type of deposit, and it quoted Dr. E.B. Gillanders, the vice-president of Rio Tinto (owner of Rio Algom mines), that it would "take some time before all its particular hazards are fully recognized" as "the menace of dust exposure in these uranium mines we believe is not yet generally understood." It noted that G.R. Yourt, an industrial hygiene officer, thought high dust levels should be lowered. One mine in 1956 had radiation levels with 1797 dust particles per cubic centimetre (ppcc) of air instead of the 100 recommended; in 1957 dust exposure exceeded the safety standard by 16 times or more. Miners' exposure to radon gas could lead to tissue damage and possibly genetic changes. Most scientists knowledgeable about the effects of radiation on the human body "have constantly revised their estimation downward with regard to permissible levels."²⁸ Mine Mill in 1958 wanted company health records to go to safety inspectors and to the miners and their safety committees, which did not happen. It charged that management's focus on employees' inexperience, carelessness, and personal habits (e.g. cigarette smoking) was a way of avoiding its responsibility. This employer tactic of blaming the victim persisted during the Ham Commission. In 1958 Mine Mill sought a royal commission in Ontario and in 1959 made a detailed report to the British Columbia WCB on "Regulations for Radiation Protection."²⁹

During this same period, the usw received information from its international office on the health hazards of refining uranium, and the union mandated safety committees in all locals. Its brief to the 1958 Commission focused on the industry's appalling accident rate, and charged that mines put production ahead of the workers' health and safety. Its recommendations were pragmatic: it wanted improved ventilation and training, all findings on the effects of lengthy exposure to uranium ore to be public, protective medical and safety measures, rules enforced, and continued study of radiation hazards. It worked for the institutionalization of OHS workplace committees with union representation as vehicles for change.³⁰

27. Tataryn, "Tortured Future"; AO, Ontario Mining Association Papers, F1352-5-0-12, Report of Canadian Executive Board Mine Mill to Ninth Canadian Convention, 11 April 1957; Eli Martel, "The Name of the Game is Power: Labour's Struggle for Health and Safety Legislation," in Mercedes Steedman, Peter Suschnigg, and Dieter K. Buse, eds., *Hard Lessons: The Mine Mill Union in the Canadian Labour Movement* (Toronto, 1995), 195–209.

28. NAC, usw Papers, vol. 71, File: Ont. Dept. of Mines – Bulletin 155, Mine Mill brief 1958 to the Special Committee on Mining Practices in Elliot Lake, 81–85.

29. MG28I268, vol. 73, File: Ontario, Elliot Lake Correspondence 1958–60, Roy Stevenson to Hon. J. W. Spooner, n.d.; vol. 71, File: Radiation Reports and Clippings 1958–59, H.L. Robinson, Mine Mill to Hearings by the BC Workmen's Compensation Board to consider Regulations for Radiation Protection.

30. Steelworkers' Brief, 1976, 2; NAC, usw Papers, vol. 71, File: Ont. Dept. of Mines – Bulletin 155, usw Brief 1958 to the Special Committee on Mining Practices in Elliot Lake, 5, 88, 89,

These union briefs, the 1958 Commission, and available research indicated that from the establishment of Elliot Lake's mines, management knew uranium mining was dangerous, were aware of the internationally recommended levels of exposure to radiation, and knowingly sustained a level of dust many times over such levels. The key to disease prevention was controlling, by adequate ventilation, the level of dust containing silicosis particles and airborne radioactive contamination. An American report in 1961 estimated that the cost of ventilating a uranium mine varied from 10 cents to one dollar per ton of ore mined. Mechanical ventilation was essential with natural ventilation supplementing it where possible. The unions understood that companies could well afford to implement adequate ventilation. A USW submission to government in 1959 noted tartly that the uranium companies in Canada "have neither gambled nor have they lost in this aborted attempt to help develop our north-land and assist our southern neighbours in their expensively shifting concepts of hemispheric defense." It estimated that one company operating six mines made a profit before taxes and interest of over 160 million dollars on an investment of slightly over 25 million dollars, and the companies were permitted to operate tax-free for the first three years.³¹ The boom-bust pattern in the industry made employment and production managements' main preoccupation, with OHS protection of the miners a significantly lower priority.

When the US Atomic Energy Commission suddenly stopped its orders in 1962, and the world market for uranium collapsed in 1963, only three mines in Elliot Lake continued to operate. The workforce contracted to about 2500, and by 1965 Elliot Lake's population was 6600. The federal government helped maintain the mines by negotiating "stretch-outs" for contracted uranium; a 1962 agreement with Britain providing for the purchase of uranium oxide for its nuclear generating stations was drawn out until 1971. Ottawa agreed to a 29.5 million dollar uranium stockpile plan, keeping Denison Mines (900 miners) and Rio Algom (700 miners) in operation. The companies had contracts to ship product to Japan and to supply Ontario Hydro.³² Expectations about the future growth of nuclear power continued uranium stockpiling and led to aggressive marketing outside the American market, as well as a closer relationship between the Canadian nuclear industry and Ontario Hydro. In 1979 demand for uranium revived with growing domestic nuclear power generation; the operating mines in Elliot Lake increased to thirteen, by then all owned and operated by Denison or Rio Algom Mines. Production continued until 1991, thereafter declining until the last mine closed in 1996, and

91–93.

31. NAC, USW Papers, vol. 71, Report, US Department of Health, Education and Welfare 1961, File: Governor's Conference on Health Hazards in Uranium Mines; usw Papers, vol. 21, File: Ontario – Elliot Lake – Correspondence, Handbills 1958–60, 1966, Larry Sefton to "Gentlemen," 19 November 1959.

32. Punnalls, "Ontario's Uranium Mining," 5–8; Julian Hayashi, *Free Press*, 17 January 1975.

the companies moved to mine higher-grade ore in the Athabasca Basin in Saskatchewan on Dene lands.³³

In the context of this unstable production pattern, the 1974 OHS scandal in the Ontario uranium mining industry resulted from persistent paternalistic management and government attitudes towards workers, the companies' primary focus on profitability, and a management-driven OHS policy that involved some consultation with workers, but as little as possible with unions. The companies vigorously protected their management rights but implemented for cost reasons minimal OHS programs. They took the same approach to industrial waste policies, which were inadequate. The companies took little action in either policy area without government intervention, which was gradual and weak until the early 1970s.³⁴

Influenced by the political context in which uranium mining in Canada developed during the war, there emerged an industry culture which involved security, secrecy, and close relationships with governments. Governments supported the industry's inadequate regulations in the OHS and environmental policy areas and, despite union complaints, persisted in lax enforcement of mining standards and of inspections. They made large infrastructure subsidies of public money to mining towns like Elliot Lake, and uttered frequent uncritical public praise for the industry and the jobs it created. By the 1970s this mix of factors contributed to the uranium mining industry's neglect and the OHS crisis.

Industry actions backed by governments were increasingly unacceptable to several vocal public constituencies. In 1965 the USW informed the Ontario government of new recommendations drafted by experts in Geneva at the International Labour Organization (ILO) regarding radiological protection of workers, which called for regular medical examinations for uranium miners. Two years later, the union still had not had a satisfactory meeting with government officials, and miners were not receiving proper medical attention.³⁵ By the early 1970s, the labour movement, environmentalists, and some government officials concerned about a potential health crisis in Elliot Lake kept up pressure for reform. The union convinced the Ontario government to study the effects of uranium mine conditions on the miners but was dissatisfied with the study's narrow scope.³⁶ Repeatedly the union urged the Ontario government

33. Lloyd Tataryn, *Dying For a Living*, 64; Anna Stanley, "Citizenship and the production of landscape and knowledge in contemporary Canadian nuclear fuel waste management," *Canadian Geographer*, 52, 1 (2008), 67; M. Bray and A. Thomson, eds. *At the End of the Shift: Mines and Single Industry Towns in Northern Ontario* (Toronto 1992), 143.

34. Ontario Deputy Minister's Committee, "Report on Radiological Water Pollution in the Elliot Lake and Bancroft Areas," (Toronto 1965), 2; 47–48, Engineering Library, University of Toronto; Ontario Water Resources Commission (owrc) Report (Toronto 1971), 3, 5, 6, 11, 14.

35. Steelworkers' Brief, 1976, 28.

36. Bray and Thomson, *At the End of the Shift*, 132.

to protect workers' health through stronger OHS legislation. Meanwhile, the Ontario Water Resources Commission (OWRC) used firmer language in 1971 to advise the industry to take measures to protect the community's environment. In 1973, just before the OHS crisis blew up in Elliot Lake, the minister of natural resources warned the mining industry as a whole that new social concerns about occupational health and industrial air and water pollution might force management to implement change.³⁷

The USW did not wait for mining companies to develop OHS programs; its staff and members developed a miners' code of safe mining practices. Over the years, it negotiated better safety provisions in collective agreements and increased its own research on safety and on industrial diseases. It met with considerable corporate resistance. In 1960, in a contract with Rio Tinto for example, the company retained the sole right to change practices regarding safety equipment, but at the same time it did not pay for the necessary safety clothing and equipment. The union repeatedly requested safety records and accident reports from mining companies and wanted miners to receive their medical reports. The USW staff developed expertise on OHS issues and miners' diseases, hiring R.J. Lamoureux in 1958 to work with local unions. In 1959 he contacted the Department of Mines out of concern about the effects of radiation on miners. Ontario's chief engineer of mines wrote him a reassuring letter about the province's regular measuring of radiation levels in the mines, which he said were below recommended levels. In 1960, the union held an OHS conference in Elliot Lake at which a doctor in the Department of Mines hygiene division reassured miners that the "radiation effects" in the local mines were "well below" the permitted maximum levels. Yet, in 1968 when an international code of practice was published by the ILO and the USW tried to get Canadian governments to adopt it, the union found its admonitions produced indifference. No discussions resulted.³⁸

In 1960, a *Globe and Mail* article reported, accurately as it turned out, "a strong possibility" that uranium miners might suffer the effects of radiation within 15 years. USW rep Lloyd Fell told the union's East Area Council that the federal government and the mining companies refused to heed the union's warnings about the effects of radiation. It learned of the dangers from its own research and from scientists and mining experts, who in 1958 toured the uranium fields at Bancroft and Elliot Lake Ontario and in Northern Saskatchewan.³⁹ In the mid 1960s the union suggested the federal government

37. "Take the Public into your Confidence Mines Urged," editorial *Northern Miner News*, 31 May 1973.

38. Steelworkers' Brief, 1976, 8, 28.

39. NAC, USW Papers, vol. 71, File: Radiation Reports, Notes, Clippings, "Radiation Danger Seen for Uranium Miners," *Globe and Mail*, 21 Feb. 1960.

start a research centre to study the situation and to address ways of prolonging Elliot Lake's existence in the face of economic downturn in the industry.⁴⁰

Most miners were unaware of the health risks from exposure to radiation, particularly after mine and health officials reassured them publicly. In the 1960s, Homer Sequin (first in Mine Mill and then with the USW) in Sudbury became "part of a group of union and community activists who took on Inco over its sulphur dioxide emissions," as cases of lung and nasal cancer increased. After five years of pressure the province ordered Inco to reduce its emissions and in 1972 it erected its superstack, which improved the region's air quality. In 1975 Sequin, experienced in industrial diseases and in relations with mining companies, moved to Elliot Lake where he lived for seven years and served on the town council from 1978 to 1980.⁴¹

The USW continued working on its OHS committees. In 1961, Local 1005 at Stelco started trying to get implemented a worker's "right to refuse unsafe work" until "the matter has been discussed with departmental management in the presence of a steward" and in 1963 a mining local in Marmora negotiated the point in its contract, which was a "significant breakthrough for Ontario mining contracts." In 1978, this innovation was part of the province's first OHS legislation.⁴²

The USW did a survey in 1967 to get an overview of the state of OHS committees in the overall mining industry. USW District 6 (the union's largest district in membership and in geography covering mines west of the Ontario/Quebec border) surveyed the 55 mines whose 26,100 employees it represented. Ten companies had *no* health and safety provisions, while 45 had OHS clauses in their collective agreements; 29 had joint company-union safety committees while 16 had variable roles for the union local. In 53 per cent of cases the local had an equal voice with the company but the frequency of meetings varied. Only 15 of the 45 contracts allowed union inspections – eight on a monthly basis and seven regularly.⁴³

The mining industry opposed the establishment of joint union-management plant safety committees. In 1968 the head of the Canadian Manufacturers' Association wrote to Ontario's minister of labour to protest changes to the WCB that recognized industrial diseases as a reason to qualify for benefits;

40. NAC, USW Papers, vol. 21, File: Elliot Lake – Correspondence, Handbills 1958–60; USW Papers, vol. 54, File: District 6 – General – Correspondence, Speeches and Misc. 1963–64, 1966, Leaflet n.d.; 1967, Review of Labour and Area Problems; Recommendations by the USWA to Prime Minister Lester Pearson.

41. Carol Mulligan, "Homer Sequin: A Life Spent Fighting for a Safe Workplace," *Sudbury Star*, 13 May 2006, <<http://www.1976usw.ca/Lifespentfighting.htm>>.

42. Steelworkers' Brief, 1976, 4, 6, 10, 13.

43. NAC, USW Papers, vol. 54, File: District 6 – General – Correspondence, Speeches, Misc., Brief on Safety and Health Committees, 8 March 1967. At that time District 6 stretched from the Ontario-Quebec border to the Pacific coast.

he wanted to continue financial penalties to improve accident prevention. "It is with extreme apprehension, and even alarm," the Association noted, that the government would authorize the WCB "to compel certain employers to establish plant safety committees." Compulsory safety committees would confuse the situation because they provided non-management personnel with "ostensible authority but no commensurate responsibility." In other words, it was a management rights issue and the association did not want the union or workers to have any real authority over health and safety issues.⁴⁴

The union pressed for a federal royal commission on OHS in the mines, wanted greater union representation, and urged the CLC to request federal government compensation payments for disabled workers. By the time the Ham Commission was appointed in 1974 in Ontario, the lamentable state of OHS in the uranium mining industry forced the companies on the defensive, strengthened union arguments, and ultimately led to new legislation and standards.⁴⁵

It is worth noting that in the early years when the mines' OHS conditions were at their worst, the mining companies' most extensive pollution of the waterways in the Elliot Lake region with radioactive contamination took place. Even with later improvements in processing tailings and efforts to control spillage from tailings ponds, the environmental protection of water remained precarious. The Ontario Water Resources Commission (OWRC) did annual water checks and its reports between 1957 and 1964 showed a substantial increase in radium-226 levels. The new mood from the late 1960s led to the firmer tone of the 1971 OWRC Report, which concluded "the wastes from the uranium mining and milling industry in the Elliot Lake area have caused serious impairment of the water quality and associated biology in the Serpent River Basin." The uranium mining industry needed to revise its standards of practice and its design of water use and waste disposal systems "to avoid chemical and radiological pollution of water associated with current mining methods and procedures." The OWRC made specific recommendations and for the first time set deadlines.⁴⁶

Thus the 1970s was a transition period. For too long, the Ontario government had treated the uranium mining industry like any other and adopted a hands-off policy. The companies acted unilaterally with little action on OHS and no notion of public health or the preservation of ecosystems, creating damaging, health-threatening industrial and environmental pollution. By the 1970s the Ontario government was studying the pollution problem as the union pressured it to act on the OHS situation. On both issues government began to increase demands on the industry. In 1971 it wanted corporate

44. AO, Ontario Mining Association Papers, F1352 -7-0-14, D.S. Keen, Canadian Manufacturers' Association (Ontario), to Dalton Bales, Minister of Labour, 2 July 1968.

45. 1959 Report, 58.

46. OWRC Report (Toronto 1971), 3, 5, 6, 11, 14.

action to improve waste disposal systems and produce less pollution.⁴⁷ In 1973, the crisis in miners' health forced the government to act on OHS policy. The growing public concern of Elliot Lake townspeople, First Nations, the union, and environmentalists pressured the Ontario government to strike a royal commission to inquire into the health and safety of the provinces' mines.

Royal Commission on the Health and Safety of Workers in Mines

THE ROYAL COMMISSION TOOK PLACE as workplaces were changing rapidly, often using more chemicals in production processes. In the 1970s, unions conducted strikes over occupational health issues as they learned of the unhealthy and unsafe conditions in work environments. The American government passed an Occupational Safety and Health Act in 1970, and in Canada several provinces were examining work environment conditions. At the same time, the budding environmental movement in North America raised public awareness of increasing levels of air and water pollution. In Ontario, environmentalists rallied support to fight mercury poisoning among First Nations communities near Dryden and severe chemical pollution in the St. Clair River near Windsor. Such issues stimulated activists in a growing OHS movement that sought improved conditions for miners in Sudbury and expressed concern about Elliot Lake miners. The mining industry responded tentatively to environmentalists, but union persistence and political pressure forced it to address occupational hazards after the enactment of the new OHS legislation. Many unions came to recognize the link between occupational and environmental health; unhealthy job environments affected the wider community health, and this led to unions and to local activists developing their own environmental policies.⁴⁸

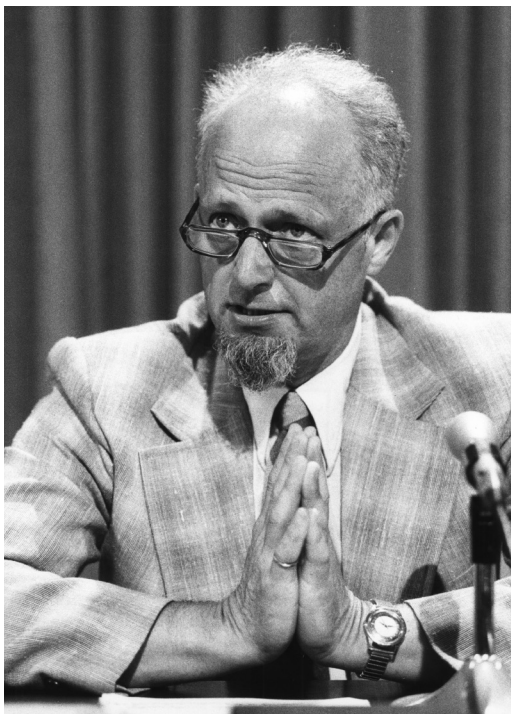
As pressure from the USW and the NDP contributed to a public furor over miners' health and conditions in Elliot Lake, the press publicized the situation.⁴⁹ Following complaints from Elliot Lake miners, Stephen Lewis deluged the legislature's standing committee on natural resources with questions that climaxed in his emotional, detailed recounting of working conditions and miners' deaths.⁵⁰ When Lewis charged the companies with "criminal negligence

47. Ontario Deputy Minister's Committee, "Report on Radiological Water Pollution in the Elliot Lake and Bancroft Areas" (Toronto 1965), 3.

48. Storey, "From the Environment to the Workplace," 423; Laurel Sefton MacDowell, "Greening the Workplace: Unions and the Environment," in L. Anders Sandberg & S. Sorlin, eds., *Sustainability – The Challenge: People, Power, and the Environment* (Montreal 1998), 150–159.

49. Rosemary Speirs, "MPP Calls on Bernier to Quit over Mine Issue," *Toronto Star*, 18 May 1974.

50. Stephen Lewis later became Canada's ambassador to the UN, and now heads up his foundation to fight AIDS in Africa.



James Ham presenting his report on the mining industry to a press conference in 1976

University of Toronto archives

for their failure to protect Elliot Lake uranium miners from silicosis and lung cancer," Natural Resources Minister Bernier promised to act immediately. Sudbury MPP Eli Martel alleged that for years mining inspectors failed to report industrial hazards and laid few charges against companies because the government had a collusive relationship with the companies.⁵¹ Opposition members indicted the government for inaction, challenged Bernier's administration of OHS issues, and called for his resignation.⁵² Bernier promised to study facts he claimed implausibly not to have received previously from his officials, to tour the mines, talk to the miners, and act.⁵³

The government established the Royal Commission as a result of the uproar surrounding the 1974 health crisis among Elliot Lake's miners, appointing James Ham to head a one-man commission. An electrical engineer, teacher, and dean of the Engineering faculty at the University of Toronto, Ham was quiet and capable. He later became dean of the School of Graduate Studies and then president of the university.⁵⁴

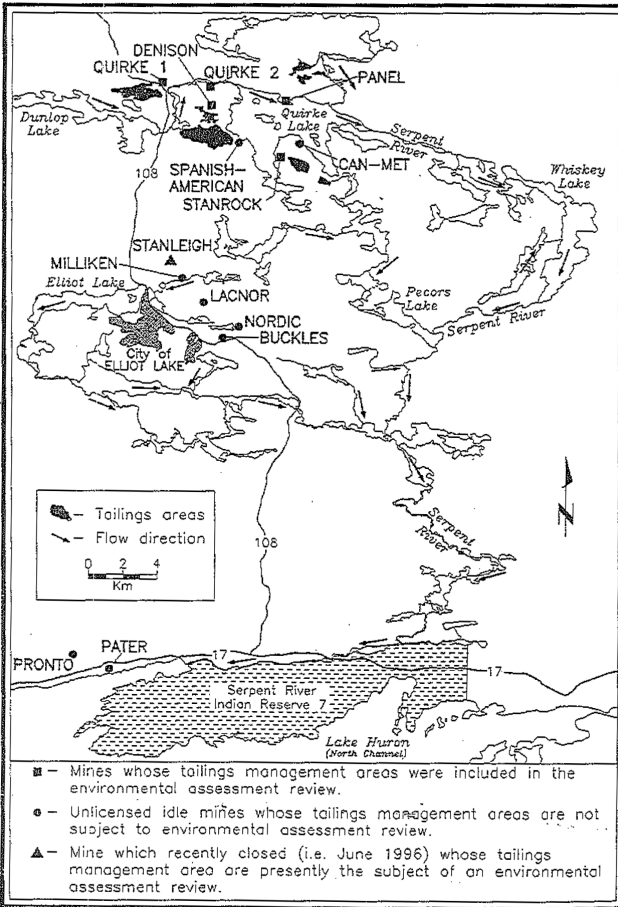
Commissioner Ham toured the mines and nine communities, talking to miners he described as skilled and tolerant. He recognized their work supported

51. Eli Martel, "The Name of the Game is Power: Labour's Struggle for Health and Safety Legislation," in Steedman, Suschnigg, and Buse, *Hard Lessons*, 196–202.

52. Rosemary Speirs, "NDP Wins Bernier Pledge to Aid Ailing Uranium Miners," *Toronto Star*, 24 May 1974.

53. Robert Storey, "Activism and the making of occupational health and safety law in Ontario, 1960s–1980," *Policy and Practice in Health and Safety*, 3, (April, 2005), 41–68.

54. Robert Williamson, "Ontario to hold public inquiry into health hazards of miners," *Globe and Mail*, 7 June 1974; "Former dean named to run mine inquiry," *Toronto Star*, 13 September 1974.



Adapted from O.W.Saarinen, 1994.

The location of Elliot Lake's uranium mines. Map by O.W. Saarinen reprinted with permission of Dundurn Press Ltd.

the industry and enriched its investors. He received a range of briefs and heard testimony. The industry was defensive but well prepared. Rio Algom's brief said too much emphasis was put on radiation as the cause of miners' cancer deaths and suggested that cigarette smoking was as serious a cause, by implication transferring responsibility for sickness from the company to the individual miner. The Mines Accident Prevention Association of Ontario (MAPAO) reported that it took dust counts but had no enforcement powers. Some companies did not think they had to have dust surveys. The Association did not object to inspectors checking the industry's tests but opposed independent monitoring. A Denison mines executive noted that in 1958 the company and union initiated a health and safety program and had held 201 union-company safety meetings. Belatedly, the company hastily planned a capital investment

of 14 million dollars, including 4 million to improve ventilation and mine safety features.⁵⁵

The Ontario Mining Association (OMA) brief rejected the “biased” media’s characterization of the industry as complacent, claiming it was alert to silicosis. It noted that world standards were changing on radiation, and that lung cancer was partly due to smoking. It wanted more government research on radiation limits, the effects of smoking, and aluminum therapy to prevent silicosis.⁵⁶ Later, the OMA wrote to Ham about the Ministry of Natural Resources brief, which had supported the industry’s outstanding health and safety record and the system of self-regulation. Nevertheless the OMA rejected the brief’s depiction of deteriorating labour-management relations in the uranium mining industry. It conceded that labour and management had different views of management rights and on increasing the regulatory process in health and safety. While it agreed to more public money being spent and more advisory committees, it supported the status quo and rejected the government’s idea for a code of standards and joint decision-making committees as a “fundamental change in philosophy.” It had accepted joint advisory committees, with a company retaining full responsibility in a “self-regulating system.” It complained of the union’s “emotional” approach.⁵⁷

The USW brief argued that the companies had “copped out” on mine safety and sought the cleanup of the underground working environment. After years trying to improve OHS standards in Ontario mines since the 1950s and with experience negotiating with mining companies, it concluded that management attitudes were unlikely to change. After complaints in 1973, the government initiated lung tests but more sophisticated tests were not started until June 1974. The union wanted one government agency with union representation to take responsibility for mine safety, providing diagnosis of diseases and also rehabilitation and compensation. The mining industry’s elevated accident rates and disease levels resulted in deaths three times higher than in manufacturing, twice the construction industry rate, and four times higher than the norm in transportation and communications. The union characterized the mining industry’s policies as “reckless,” proposed that new mines do “health-impact” studies *before* new chemicals were introduced into the workplace, and urged the government to legislate the right of workers to refuse unsafe

55. “Industry opposes policing aspect,” *Globe and Mail*, 24 October 1974; James Jefferson, “Mining report author: quiet but not meek,” *Globe and Mail*, 24 August 1976.

56. A controversial prevention method was to have miners breathe in aluminum dust to coat their lungs so deadly radon gas would not penetrate them. It was a compulsory procedure until the union and miners protested that the cure was as bad as the disease because it also increased the incidence of lung cancer.

57. AO, F1352-2-0-1-3, Royal Commission on Health and Safety in Mines, general 1973–75, OMA Brief, 29 May 1975; OMA Brief— preliminary outline; OMA press release, 29 May 1975; F1352 Ontario Mining Association Papers, no. 4, File: Royal Commission on Health and Safety of Workers in Mines – general 1973–75, Norman H. Wadge to James Ham, 7 October 1975.

work.⁵⁸ More research funded by the mines to improve standards, reduce noise, improve lighting, get rid of heavy drills, and study diseases was needed, but it noted, "The federal Atomic Energy Control Board is so lax that when the union demanded a survey of fumes and dust at Denison, the investigators merely checked the calibration of a dust measuring instrument used by the company." The AECB needed to inspect Denison and Rio Algom mines; the union wanted production suspended until the companies corrected conditions with lost wages paid. A limit on exposure to radiation and enforcement of existing regulations were necessary; only recently were men on night shifts given facemasks and filters required under the Mining Act. The usw opposed the companies' challenge of injured workers' disability claims before the wcb. usw staff person Ken Valentine protested that the mines maximized their profits and gambled with workers' lives "with 'total compliance' of the engineering branch in the mines ministry."⁵⁹

The union's presentation and report to the commission recommended broader wcb coverage for industrial illnesses, better benefits for disabled miners, improved counseling services, easier procedures for employees making claims, reversing the onus on workers who until then had to prove their claims, and reforms to doctors' reports on miners. It sought health and safety committees in all places of work and independent inspections of work-sites. It sought more research, claiming that the ore body at Elliot Lake had a high silicotic dust content, and stressing that danger from radon daughters and alpha-beta and gamma rays, which could irradiate lung tissue with the inhalation of radionuclides, needed to be addressed. Insisting that respiratory cancer resulted from high dust levels and from diesel fumes from underground equipment, the union sought the adoption of enforceable Threshold Limit Values (TLV) set by the American Congress of Governmental Industrial Hygienists for substances encountered in the workplace.⁶⁰ Like the NDP, the usw charged that the Department of Natural Resources was "a handmaiden of the industry," pointing to its collusion with companies when it notified them in advance of inspectors' visits so they had time to clean up the mines. Dramatically supplementing the union's testimony and briefs throughout the inquiry were the stories of actual miners suffering from injuries and illnesses or their widows struggling to get compensation from the wcb.⁶¹

58. Julian Hayashi, "Hearing told mining firms cop out on safety," *Free Press* (London), 18 February 1975.

59. *Free Press*, 16 January 1975.

60. uswa Brief to the Royal Commission on the Health and Safety of Workers in Mines, 28 May 1975, 82-94, Centre for Industrial Relations and Human Resources Library, University of Toronto.

61. Gerald Seniuk, "Case histories of suffering from Elliot Lake's mine's," *Globe and Mail*, 17 June 1974; Rosemary Speirs, "Ailing miners ask for aid to restore their dignity," *Toronto Star*, 15 January 1975; "85-pound silicosis victim adds touch of drama to mine safety investigation,"

The WCB told the commission that Elliot Lake had 136 known cases of uranium miners with silicosis and 126 new claims before the board. The Workmen's Compensation Act was changed in 1974 to allow benefits for men with some degree of silicosis still working in dust exposure areas. Most of the 107 new claimants for silicosis victims were for Elliot Lake miners. About 100 pre-silicotic miners were given priority for surface jobs.⁶²

Occupational and Environmental Health

IN THE 1970S AS THE DUST LEVELS in Elliot Lake mines remained high, uranium miners continued to die from silicosis and cancers as radiation hazards increased the number of WCB cases. Yet the poor OHS practices of the uranium mining industry were unnecessary. Dr. Robert Morgan, a medical researcher at the University of Toronto told the commission that health hazards for uranium workers were known before the uranium mines in Elliot Lake opened. He thought company and government demands for more research were an excuse to delay action and found the Department of Mines and the WCB paternalistic. They did not give the miners the results of air quality tests or inform them of the health hazards of working in the uranium mines.⁶³ Norman Wadge of the OMA told the commission that in the mid-1950s mining company and government officials discussed "possible radiation problems for miners," but a health ministry official indicated that "scientific and medical experts" could not provide definitive conclusions on radiation hazards as "nowhere in the world were absolute limits set on tolerance levels for radiation in the uranium mines and on miners." As the ministry had no plans for taking dust samples, the mining association took samples "in the event questions about radiation were raised in the legislature." In response to criticism that the mining industry was not doing enough to curb pollution, Wadge stated that in 1972 the industry allocated 500 million dollars over five years for pollution control.⁶⁴

The issue of medical records arose at the hearings. Dr. Charles Stewart, head of the WCB's chest division, made an unscheduled appearance because he was "enraged" by a Rio Algom executive's statements. Between 1971 and 1973 he met with the mines' executives and offered them the names of pre-silicosis miners if the companies would devise a program with the union to get such men out of their hazardous environment and into surface jobs. Their numbers were increasing and if their conditions worsened, he worried the WCB could

Hamilton Spectator, 15 January 1975.

62. Julian Hayashi, "136 miners at Elliot Lake victims of lung disease," *Free Press*, 6 February 1975.

63. Julian Hayashi, "Better health hazard info urged for miners," *Free Press*, 31 May 1975.

64. Julian Hayashi, "Cover-ups of Mine Safety Hazards Denied," *Free Press*, 30 May 1975; Pat Moauro, "Criticism of mine industry as polluter termed unjustified," *Free Press*, 26 April 1973.

not handle the situation. The companies refused to cooperate but wanted the miners' names. For privacy reasons and out of fear of what they would do with the information, he refused the names as the miners were vulnerable. Thus many miners with silicosis continued working in the mines for economic reasons.⁶⁵

The commission hearings revealed the difficulty in convincing the WCB that the work environment caused several diseases (silicosis, cancer, chest diseases).⁶⁶ Standards for dust and radiation levels were not set. The mines and inspectors, federal and provincial, all used different instruments to measure dust so the resulting counts could not be correlated.⁶⁷ A system to monitor an entire mine environment was possible but unavailable.

The Ontario health ministry's occupational health branch issued a guideline (not legally backed) of a Threshold Limit Values (TLV) of 176 particulates per cubic centimeter (PPCC). The guideline was derived from the South African mining experience, which Dr. W.M. Gray, a research scientist at the Canada Centre for Mineral and Energy Technology, thought "questionable": historically African uranium workers' exposure to radiation was the highest recorded in the world.⁶⁸ Between 1958 and 1974 a mining industry survey showed no cases with the level below that guideline; reports sent to the Natural Resources Ministry were simply filed. Despite the ministry's standard, the average TLV count was 289 to 354 PPCC in 20 mines. The companies allowed that level to persist for years and with no intervention from the ministry. Between 1958 and 1964, in 13 of 22 uranium mines the overall averages exceeded 600 PPCC, including one working area with a count of over 800 PPCC, three over 700 PPCC, and nine others exceeding 500 PPCC. In 1972 the average dust count in the mines never fell below 300 PPCC, and in 1973 and 1974 the two remaining uranium mines had 30 per cent of their dust count readings over 300 PPCC. The WCB figures indicated there were 136 miners with silicosis, 100 more were pre-silicosis (some still working), and 41 deaths had been registered from lung cancer and respiratory diseases.⁶⁹

65. Julian Hayashi, "MD says Mines Ignored Plea to Help Men," *Free Press*, 29 May 1975.

66. This issue had occurred elsewhere. Angela Nugent, "The Power to Define a New Disease: Epidemiological Politics and Radium Poisoning," in David Rosner and Gerald E. Markowitz, *Dying For Work: Workers' Safety and Health in the Twentieth Century* (Midland 1987), 177–191.

67. OA, Ontario Mining Association Papers, File F1352-2-0-3, Correspondence 1971–74, vol. 5, N. Wadge to J. Ham, 1 April 1975.

68. Gabrielle Hecht, "Africa and the nuclear world: labor, occupational health, and the transnational production of uranium," *Comparative Studies in Society and History*, 51, 4 (2009), 896–926.

69. "Confusion prevails in mine dust counts," *Labor Canada*, 27 May 1975; "Union and Management views clash at Mine Safety probe," *The Searcher*, Sudbury, Local 6500, 13, 2, February 1975; Julian Hayashi, "Cover-up claimed over 'killer' dust," *Free Press*, 19 February 1975.

Stephen Lewis told the hearing of “the conspiracy of silence between the resources ministry and the mining industry in Ontario,” which meant that the union, miners, and the public were not informed of health hazards. In 1969 two doctors in the Health Ministry found 16 deaths from lung cancer among Elliot Lake miners, many with significant exposure to radiation. Their papers to an international scientific conference in 1974 sparked the miners’ wildcat strike.⁷⁰

The Ham Report

“FREDERIC LELOY, A DISTINGUISHED FRENCH sociologist and inspector general of the mines of France in the late 19th century, said the most important thing to come out of the mines is the miner. I share his conviction today.”⁷¹ With these remarks, Commissioner James Ham began his 1976 report of the *Royal Commission on the Health and Safety of Workers in Mines* to the government of Ontario. The report strongly criticized governments and mining companies for failing to protect 30,000 Ontario mineworkers from hazardous conditions that led to death, accidents, diseases, and disabilities. Information went to governments but was not available to the miners, which shocked Ham, who later commented, “workers have not known the levels of dust, radiation and noise in which they’ve been working.” He criticized the industry and governments for “a serious lack of openness” on miners’ health and safety as statistical information and research “has been inaccessible to workers and the public.” Advocating action, though not the union’s proposal that workers could refuse to do unsafe work, Ham particularly noted the uranium mining industry’s poor conditions, stressing increasing numbers of miners with silicosis and lung cancer caused by dust inhalation. “The risks to health and safety in mining, illustrated by the sad experience in the uranium mines and the perennial list of accidents and injuries, are higher than in most sectors of the industry.”⁷²

Among its 117 recommendations, the report concluded there really was no safe level of radiation. Twenty-three recommendations addressed lung cancer and radiation levels in mines, called for better research, stricter regulations to protect miners, and improved on-site monitoring systems. Ham urged a drastic overhaul of both the AECB and provincial health and safety policies, targeting confused government jurisdictions and unclear OHS policies in the uranium industry. The report criticized the lack of government regulation and recommended a provincial OHS framework to facilitate a cooperative,

70. “Conspiracy protected radiation levels: Lewis,” *Toronto Sun*, 19 February 1975.

71. James M. Ham, *Report of the Royal Commission on the Health and Safety of Workers in Mines* (June 1976), xi (hereafter Royal Commission Report).

72. Royal Commission Report, 1976, 20, 26, 30, 33, 77, 249; James Jefferson, “Mining Report Author Quiet but not Meek,” *Globe and Mail*, 24 August 1976.

open approach by management and labour. Ham publicly stated that it was incomprehensible “for there not to be statutory regulations which govern the exposure of workers to toxic substances fifty years *after* a disease like silicosis has been discovered and after the occurrence of, by now, approximately two thousand cases.” Necessary changes in government policies and industrial practices required new legislation administered by an Occupational Health and Safety Authority, which would replace existing weak guidelines and codes in Ontario and Ottawa. The report influenced the passage of the *Ontario Occupational Health and Safety Act* (1978) applicable in all workplaces; other provinces passed similar legislation.⁷³ Ham deplored the mining industry’s continuation of its old ways and recommended an approach the unions had advocated for years.

When the commission studied lung cancer deaths among uranium miners in Elliot Lake and in Bancroft, it found that 90 men died of lung cancer from among those who worked for one month or more between 1955 and 1975 and were exposed to radiation and dust. This number was 45 more than scientists would expect in a normal population. The “costs of nuclear power for public use are so vast,” Ham concluded, “that the costs of being publicly responsible to uranium miners and their families are by comparison negligible.”⁷⁴

Responses to the Report and New Legislation

QUIET, CONSTRUCTIVE, HUMANE, and scientific were some of the adjectives used in the positive responses by government, industry, and union spokespersons to Ham’s Report. The companies praised it as a guide for upgrading OHS in the mining industry, accentuated their recent improvements in ventilation and dust control, and noted that the proposed joint safety committees were already in place.⁷⁵ The OMA discussed the report with its members before releasing any comments and told the cabinet committee it agreed with 63 of the recommendations in principle, thought others needed qualification, and opposed some as either technically impossible or impractical because of expense. It favoured labour-management health and safety committees on a *voluntary* basis only and asked to confer with government before it implemented any of the report.⁷⁶

73. Tataryn, *Dying For a Living*, 62, 99; E. Tucker, “Remapping Worker Citizenship in Contemporary Occupational Health and Safety Regimes,” *International Journal of Health Services*, 37, 1 (2007), 145–170; Royal Commission Report, 1976, 265–268; Ian Robinson, *The Costs of Uncertainty: Regulating Health and Safety in the Canadian Uranium Industry* (Kingston 1982), 10; Norman Webster, “Dandy issue for pols,” *Globe and Mail*, 26 August 1976.

74. Royal Commission Report, 1976, 108, 110.

75. “Royal Commission report on health and safety welcomed by operators as an aid in programs,” *Northern Miner*, 2 Sept. 1976.

76. AO, Ontario Mining Association Papers, vol. 21, File F1352-7-4-14-3, “Assessment by staff

USW Director Lynn Williams supported the report, which described a “horror story” that reinforced the union’s charges of the industry’s and government’s neglect of employee health. He criticized the report for not advocating the testing of all new chemicals and processes before they were brought into use and for not backing a worker’s right to refuse unsafe work. WCB spokesman Ken Harding thought it a first-class report, but would not comment on Ham’s recommendation for compensation, as yet not funded, for the widows and families of 61 uranium miners who died of lung cancer from working in mines in Elliot Lake and Bancroft.⁷⁷

After the report’s release, Ham admitted in interviews he was “mightily annoyed” by some things he encountered during the inquiry. One problem was to get managers to see the mines as human organizations as well as productive ones. He was politicized to the extent that he encouraged the government to act on his recommendations. He recognized the commission was set up to get the government off a political hot-seat, but his major theme was the “serious lack of openness” and information about OHS in the mines. Workers had a right to be informed about the risks in their work.⁷⁸

The press publicized the report favourably. Editorially, even the conservative *Toronto Sun* found it incomprehensible that no standards of exposure to silica dust were enforced in Ontario after miners had died of silicosis for years. It recognized that the mining companies out of greed had ignored OHS problems even as they concentrated “on making a big buck and fighting the government for more tax breaks.” The *Sun* thought no government could ignore such a report if it purported to have the interest of people at heart.⁷⁹

The Ontario government responded quickly to the Report. It centralized all aspects of mine safety under the Ministry of Labour portfolio, set up a special cabinet committee to examine Ham’s recommendations, consulted with interested parties, and decided to implement much of the report. The industry had a two-day review to plan its public relations and a unified approach to government. The OMA decided not to be totally negative and reconciled itself

of the Ontario Mining Association as to the acceptability of the recommendations of the report of the Royal Commission on the Health and Safety of Workers in Mines, for review by the Association Directorate,” 20 September 1976; Ontario Mining Association Papers, F1352, F1352-2-0-9, B244378, “Revised Draft of OMA letter to Cabinet Committee.”

77. News release, “Royal commission: Industry, governments guilty as charged, Steelworkers say”; A.G. Vance, “New approach to health and safety in mines outlined in report of the Royal Commission,” *Northern Miner*, 26 August 1976; Victor Malarek, “Mine report is ‘one of best,’ Stephenson says,” *Globe and Mail*, 25 August 1976; F1352, Ontario Mining Association Papers #6, Norman Wadge to Jim Ham, 26 August 1976.

78. Victor Malarek, “Governments, companies accused of risking miners’ health and lives,” *Globe and Mail*, 24 August 1976.

79. “Mine Misery,” editorial, *Toronto Sun*, 25 August 1976.

to a greater degree of labour involvement and more sharing of information, but persisted in trying to limit labour to an advisory role.⁸⁰

The federal Energy Department set up a representative committee (of companies, the union, the AECB, federal and provincial environmental agencies) to plan a research program to “overcome health problems caused by uranium production.” But the problem of split jurisdiction the report noted between the federal AECB and the Ontario Ministry of Natural Resources persisted. In 1974 the AECB had its own Mine Safety Advisory Committee investigate health and safety matters. Not until 1984 did the board pass the *Uranium (Ontario) Occupational Health and Safety Regulations*, which stated that uranium mines must comply with the *Ontario Occupational Health and Safety Act*. In 1980, the B.C. Medical Association declared the AECB “unfit to regulate” because of “its callous disregard of medical evidence regarding lung cancers from radon.” An independent scientific study concluded that levels of radon exposure considered “acceptable” by the AECB could cause “a quadrupling of lung cancers among uranium miners.”⁸¹ Despite the AECB’s casual approach to occupational and environmental health and waste disposal regulations, after 1984 uranium-mining operations underwent more stringent on-site inspections and companies had to report accidents to the board.

Public protests, the wildcat strike over conditions in Ontario’s uranium mines, rising sickness and death rates of miners, the Ham Commission, and inadequate OHS records and procedures all led to Ontario’s first *Occupation Health and Safety Act* (1978). But as uranium mining was a federal matter, Ontario miners were not covered at first by the new provincial legislation. The USW by then had an environmental representative, Paul Falkowski, who publicized that the mines remained dangerous places to work where miners frequently got lung cancer.⁸² In 1980, the union demanded the same protection for uranium miners as in the Ontario act. The AECB did not include provisions such as placing the burden of proof on the company, the right of workers to refuse unsafe work, appeal provisions, workers’ rights to inspect the workplace once a month, and to accompany an inspector. Thus in 1982, the USW relied on its own negotiated collective agreement with the Elliot Lake mines to win full-time safety representatives selected by the union and trained and paid for by the companies. The uranium miners also won through collective bargaining the right to shut down an unsafe operation, a breakthrough provision. The same contract made the increasingly controversial inhalation

80. “Stephenson says Labor Ministry to take over job health, safety,” *Globe and Mail*, 21 September 1976; F1352, Ontario Mining Association Papers #5, John Graham to E.G. Crayston, 12 June 1975.

81. “Cabinet Committee will study 117 mining health suggestions,” *Globe and Mail*, 26 August 1976; Gordon Edwards, “Speaker’s Notes for the Nunavut Planning Commission,” <www.ccnr.org/Baker_Lake_summary.pdf> 7.

82. Tataryn, “Tortured Future of Elliot Lake,” *Saturday Night*.

of aluminum dust that supposedly protected miners from silicosis optional rather than compulsory.⁸³ It took two more years for the federal government to adopt new OHS regulations for Canada's uranium mining industry in accordance with Ontario's new standards.

Elliot Lake remained a dangerous place to work between 1957 and 1995, with 108 men killed in mining accidents and over one thousand dead from industrial diseases directly linked to uranium mining. In 1991 Denison Mines and Rio Algom closed their operations in Elliot Lake after Ontario Hydro cancelled its contract to buy uranium. In 1992 the mining companies began relocating to northern Saskatchewan. They filled the Elliot Lake mines with water and razed the headframes and administrative offices.⁸⁴ The public paid for a decommissioning process to develop procedures to contain the tailings permanently "within acceptable limits" to ensure the long-term safety of the mine sites.⁸⁵

Throughout the turbulent 1970s the town of Elliot Lake survived. The people who stayed and lived through its precarious fortunes were often critical of the miners' health issue, and antagonistic to Paul Falkowski who admonished job-seekers "to shun the Elliot Lake mines" when Rio Algom and Denison with new contracts were crying for miners. But Elliot Lake miners continued to die from cancer and silicosis at an alarming rate despite some company improvements in ventilation and monitoring of dust levels. The town split over the health issue; some resented "outsiders," including the media, southern politicians, and Falkowski. The relationship between the companies and the union remained bitter, and the work environment continued to be dangerous for miners, but in the long term, some pro-industry citizens could rationalize the situation.⁸⁶

After the last mine in Elliot Lake closed, a negotiated Closure Agreement superseded collective agreements and improved the severance pay and pensions for many miners. Ontario Hydro earlier paid a 250 million dollar adjustment fund, out of which Rio Algom got over half (160 million dollars) to stay open until June 1996. Ninety million dollars went to retire the municipal debt and ease the transition as Elliot Lake was advertised as a retirement community, in what one commentator called "an ethically questionable reclamation" of the abandoned mining community. Elliot Lake promoted the arts, tourism, and inexpensive housing for seniors, its endeavours supported

83. "usw Wins Right to Shut Down Unsafe Operation, Union Reports," *Canadian IR & Personnel Developments*, 5 May 1982; Mick Lowe, "Miners rage at Ottawa over safety bill," *Globe and Mail*, 12 April 1980.

84. Anne-Marie Mawhiney, and Jane Pitblado, *Boom Town Blues: Elliot Lake: Collapse and Revival in a Single-Industry Community* (Toronto 1999), 197, 200.

85. Decommission report, "Decommissioning of Uranium Mine Tailings Management Areas in the Elliot Lake Area," 1, 3, 10, <www.ceaa.gc.ca/DBD6667F-9B4F-4FB6-A55F.../elliott_e.pdf>.

86. Tataryn, "Tortured Future of Elliot Lake," *Saturday Night*.

by the companies and local businesses. Optimistic municipal boosterism glossed over the mines' extensive environmental pollution. One company vice president observed flippantly, "Senior citizens have faced numerous hardships during their lifetimes – wars, depression, inflation. So what's a little low-level radioactive waste."⁸⁷

The federal government appointed a decommissioning panel because, coinciding with its poor OHS record, the industry left about 160 million tonnes of radioactive, acidic, and toxic uranium mill tailings stored behind earthen dams. Between 1955 and 1990, these periodically leaked and spilled waste into nearby valleys and waterways.⁸⁸ The decommissioning panel's 1996 report noted: "the tailings of the Elliot Lake uranium mines present a perpetual environmental hazard"; programs to maintain the sites would be "in perpetuity"; the tailings hazard created uncertainty about the surrounding complex ecological systems; and it recommended a permanent endowment fund to support research on the mines' waste facilities.⁸⁹

Conclusion

THE URANIUM MINING INDUSTRY LEFT a legacy of poor occupational health and safety policies and serious lasting pollution of the environment. Today, the Ontario government remains committed to expanding nuclear power as an energy source. In response to climate change, the nuclear industry presents itself to the public as a "green" industry that does not emit carbon. Historically, the nuclear industry created serious pollution at every stage of a production process that has killed many people and poisoned the environment. Its negligence towards the environment, employees' and community health, and First Nations displayed arrogance, hubris, and the brazen use of political influence. The 1970s Elliot Lake situation publicly exposed the uranium mining industry's poor OHS record and raised questions about its environmental impact on the community. No comprehensive analysis of the Canadian nuclear industry's occupational health and environmental record, its nuclear waste problem, or its decision-making culture has been published.⁹⁰ Instead a nuclear lobby and

87. Mawhiney and Pitblado, *Boom Town Blues*, 200, 273–276; "Denison mines close union operation in Elliot Lake," *Toronto Star*, 30 April 1991.

88. Stanley, "Citizenship and the production of landscape," 167; Sefton MacDowell, "The Environmental Effects of Uranium Mining on the Elliot Lake Area, 1955–2004," 35.

89. Decommissioning report, 'Decommissioning of Uranium Mine Tailings Management Areas in the Elliot Lake Area,' 1, <www.ceaa.gc.ca/DBD6667F-9B4F-4FB6-A55E.../elliott_e.pdf>.

90. Excellent specialized studies include Genevieve Fuji Johnson, *Deliberative Democracy for the Future: The Case of Nuclear Waste Management in Canada* (Toronto 2008) and *Nuclear Waste Management in Canada: Critical Issues, Critical Perspectives* (Vancouver 2009). See also Darrin Durant, "Burying globally, acting locally: control and co-option in nuclear waste management," *Science and Public Policy*, 34, 7 (Aug. 2007), 515–528.

governments make decisions about nuclear power primarily on the basis of economic considerations without examining these social or environmental issues and largely ignore notions of sustainability, protection of public health, or security.