

## An Environmental Approach To Workplace Health And Safety

Occupational health and safety and environmental health are two distinct subjects with many parallels. In a limited work environment, like a factory, or a particular natural landscape, concerns regarding contaminants are similar. We basically encounter a source of contamination, a transportation vector, and a target organism. Aside from accidents or foul behavior, problems with contaminants usually result from a diffuse, unnoticed, dispersion. As for the results of contamination, impacts on workers and environment are comparable. The most sensitive workers and ecosystems are affected first. This schematic simplification might seem out of date; but such cases are still encountered today, as in the case of chronic beryllium disease (CBD), a chronic illness related to a sustained exposure to low concentrations of beryllium particles (Willis *et al.* 2002). Recognizing the many caveats in occupational health practices, could work related illnesses be avoided using an environmental impact assessment procedure? Taking an environmental approach to workplace health and safety could be both democratic and beneficial for workers and the communities.

In the province of Québec alone, roughly 2,800 establishments manipulate beryllium at some stage of production (Le Métallo 2001). The developments at the *Noranda* factory in Rouyn (Québec) is a good illustration of the risks associated with beryllium containing products: 3 workers were diagnosed with CBD in early 1999<sup>1</sup>. Metal recycling plants like *Noranda* in Rouyn, a facility extracting copper, poses great danger to unprotected workers. According to the *Confédération des Syndicats Nationaux* (CSN), workers did not receive sufficient protection and information concerning beryllium exposure before handling contaminated materials<sup>2</sup>.

Recent case studies in North America indicate a preponderance of beryllium sensitization<sup>3</sup> and CBD in individuals exposed to levels of beryllium below the safety standards (Eisenbud 1998; Deubner *et al.* 2001). Beryllium is not an exception. Other contaminants, like the fibrous mineral asbestos, only obtained proper control many years too late. Part of the problem with occupational hazards lies within our belief system. Beliefs based on knowledge, tools, and protective standards of a period in time. Beliefs bound to be filled with uncertainties, firstly because of their inherent subjectivity and secondly since new products are manufactured faster than specialists can assess their respective risks. Therefore our security standards, founded upon dynamic beliefs, vary along the way.

Personal predispositions to beryllium particles represent a determining factor in the onset of CBD. Some individuals need protection beyond the national and international standards of 2µg/m<sup>3</sup>, or less, applied throughout the beryllium industry (Willis *et al.* 2002; Rossman 2001). New cases of CDB have increased alarmingly in recent years among workers due to the development of more efficient screening tests (Eisenbud 1998). These occupational exposure levels, established since 1949 across North America,

---

<sup>1</sup> [www.csn.qc.ca](http://www.csn.qc.ca)

<sup>2</sup> [www.csn.qc.ca](http://www.csn.qc.ca)

<sup>3</sup> Sensitization: Individuals who are exposed to beryllium can become sensitized, in other words, allergic to beryllium. It is believed to be the first stage of the chronic form of the disease (Eisenbud 1998)

based on comparison studies, are being reevaluated (Wambach & Tuggle 2000). Concerns about its efficiency are leading scientists to demand further reduction and modification of actual exposure parameters (Paustenbach *et al.* 2001).

Exposure levels are part of the ever changing web of occupational health. They exist in order to protect workers, assuming that the precise exposure parameters are known and controlled (ACGIH, 1999). The employees expect appropriate working conditions. They rely on management and health services (ex: CSST<sup>4</sup>) to guarantee a safe workplace, so all can benefit from the tasks at hand. Everyone should have a right to, and a responsibility for, a safe work environment. Workers that become ill do not reap their part of the bargain. However appealing the salary or compensation for the individual and his family, the impact of disease is always too great.

The effects of disease and pollution can lead to certain analogies about their extent to the social fabric. Individual workers and contaminated sites for example will have repercussions on their entourage, personal and urban respectively. For the ill worker, the family dynamic will alter dramatically. Firstly, a debilitating disease like CBD has no cure and will limit the one affected in his every day activities, familial, social, and professional. Secondly, the worker will have to find work elsewhere in order to cease his exposure to beryllium. Social security standards for beryllium related diseases in Québec assure the allocation of 90% of the salary for up to 12 months (Plante *et al.* 2002). The transition to a new job can be a stressful event. Salary, location, friends, a new education, and social benefits are but a few influential factors. Thirdly, considering the illness is incurable, Plante *et al.* (2002) note insurance plans will be more expensive or simply unavailable. Bank loans can also be denied on a health basis, a situation that has been observed in Québec with employees that contracted CBD (Le Metallo, 2002). Furthermore, employers might hesitate hiring a physically predisposed individual.

In comparison to the effects of disease on the worker and his family, contaminated lands in an urban setting hinder the development of a town. Soiled sites must be properly treated, covered, and managed in order to be used. They limit city growth; demand the transfer of public funds; and represent a burden for the communities that must manage sites contaminated before the implementations of more stringent measures (MENV-LQE<sup>5</sup> 2003; MENV-Projet de loi 72 2002). Every citizen becomes a victim. Nowadays, even if the laws have been modified to limit the degradation and pollution of land, the impacts can still be felt. Promoters avoid projects on contaminated sites, in respect to the risks and costs associated with them.

Taking in account our present understanding and knowledge of the risks associated with the use and manipulation of chemical and physical elements, it seems paradoxical that workers and the general population are still at risk on so many levels. Human beings are aware of the grey areas surrounding environmental and occupational safety, but seldom await clear and precise results. Environmental impact assessment studies have been applied for years on an array of projects affecting the environment. They are a complex legal tool designed to mitigate foreseeable impacts. As Rosenberg *et al.* (2001) noted, a work environment impact assessment tool could be created, considering a work environment as a natural one. Based on the premise that workplaces are closed

---

<sup>4</sup> CSST : Commission de la santé et de la sécurité au travail du Québec

<sup>5</sup> LQE : Loi sur la Qualité de l'Environnement, *Chapitre 1, section IV.2.1*

ecosystems, such a management tool could assess both the direct and indirect impacts of operations on the workforce (Rosenberg *et al.* 2001).

Dick Martin recognized the common ground between occupational and environmental health. Both issues are intrinsically woven together on a broad scale, locally and globally. A citation from Chivian and Bernstein (Chivian & Bernstein 2004) on the role of policy makers in the modern environmental crisis sums up what could be said about industrial policy makers and the risks workers face: *'Like most people, they do not spend much time thinking about other life forms, and they generally act, unknowingly, as if human beings were separate from the rest of nature'*. Cost-effectiveness and cost-benefit approaches still drive risk analyses policies. Health effects are considered once they are monetized, because economic impacts of regulations govern decision making (Rosenberg *et al.*, 2001). It does not seem ethical to weigh positive impacts of regulations on occupational and environmental health against the economic benefits resulting from a risk reduction.

Environmentalists and industrial hygienists thus face similar challenges. Families, like citizens, endure the burden of past regulations and errors, often with far reaching consequences. As we continue to rely on developing technologies to find new, more appropriate, ways of working, the most sensitive and predisposed individuals and landscapes suffer the most from ignorance. Dick Martin demonstrated great compassion for all workers, considered as a whole and most importantly, considered individually, one at a time. Workplace standards should assure the protection of every individual, even the most sensitive ones. It might be a costly endeavor, but it is the basis of an egalitarian society. Otherwise, factories will either cause harm or discrimination to some workers.

Dick Martin's name is not the most familiar in Québec. However, one has to acknowledge that his work was considerable, appreciated, and innovative. Dick Martin helped taper the caveat between human activities and their healthy management. It's been said that he was on the right side of issues, even when they weren't popular<sup>6</sup>. Great deeds are accomplished by people who strive to push the boundaries, without ever seeking public recognition or popularity, achieving their goals with a lack of ostentation.

*'We must remain active and demand change. We owe it to ourselves and future generations.'* Dick Martin 1944-2001<sup>7</sup>

---

<sup>6</sup> <http://www.whsc.on.ca/NEWS/DickMartin.html>

<sup>7</sup> <http://www.whsc.on.ca/NEWS/DickMartin.html>.

## References

ACGIH. 1999. American Conference of Governmental Industrial Hygienists: 1999 Threshold limit values (TLVs) for Chemical substances and physical agents and biological exposure indices (BEIs). Cincinnati, OH. 184 pages.

Canadian Centre for Occupational Health and Safety web site. [www.cchos.ca/](http://www.cchos.ca/) (accessed 11/2003).

Chivian, A.S. & Bernstein, E. January 2004. Embedded in Nature: Human Health and Biodiversity. *Environmental Health Perspectives*, 112 (1): 12-13.

Confédération des Syndicats Nationaux web site. [www.csn.qc.ca](http://www.csn.qc.ca). (accessed 01/2004)  
- Laurin, L. *Double danger chez Noranda*

Deubner, D., Kelsh, M., Shum, M., Maier, L., Kent, M., Lau, E. 2001. Beryllium sensitization, chronic beryllium disease, and exposure at a beryllium mining and extraction facility. *Applied occupational and environmental hygiene*. 16(5): 579-592.

Eisenbud, M. 1998. The standard for control of chronic beryllium disease. *Applied occupational and environmental hygiene*. 13(1) January: 27-31.

Environment Canada web site (accessed 21/01/2004).  
<http://www.ec.gc.ca/>

Le Métallo. janvier-février-mars 2001. Béryllose – Les employeurs doivent prendre leur responsabilité. [www.ftq.qc.ca](http://www.ftq.qc.ca). (accessed 01/2004).

Ministère de l'Environnement du Québec web site. <http://www.menv.gouv.qc.ca> (accessed 10/2002)  
- Projet de Loi 72 : Loi modifiant la Loi sur la qualité de l'environnement et d'autres dispositions législatives relativement à la protection et à la réhabilitation des terrains.  
- Loi sur la qualité de l'environnement

Paustenbach, D.J., Madl, A.K., & Greene, J. 2001. Identifying an appropriate occupational exposure limit (OEL) for Beryllium: Data gaps and current research initiatives. *Applied occupational and environmental hygiene*. 16(5): 527-538.

Plante, R., Nadeau, D. & Robitaille, M. 2002. La Béryllose. *Médecin du Québec*. 37(10) : 97-101.

Rosenberg, B.J., Barbeau, E.M., Moure-Eraso, R. & Levenstein, C. 2001. The work environment impact assessment: a methodologic framework for evaluating health-based interventions. *American Journal of Industrial Medicine*. 39: 218-226.

Rossmann, M.D. 2001. Chronic beryllium disease: a hypersensitivity disorder. *Applied occupational and environmental hygiene*. 16(5):615-618.

United Steelworkers of America web site. <http://www.uswa.ca/eng/tributes/dmartin.htm> (accessed 11/2003).

Wambach, P.F. & Tuggle, R.M. 2000. Development of an eight-hour occupational exposure limit for beryllium. *Applied occupational and environmental hygiene*. 15(7): 581-587.

Willis, H.H. & Florig, H.K. 2002. Potential exposures and risks from beryllium-containing products. *Risk analysis*. 22(5): 1019-1033.

Workers health and safety centre (WHSC) web site. <http://www.whsc.on.ca/NEWS/DickMartin.html>  
(accessed 01/2004)