



To: Local Coordinators, Bargaining Unit Presidents, Joint Health and Safety Committee (JHSC) members from the Executive Booklet, Health and Safety Network Leads

From: Linda Haslam-Stroud, RN, President

Date: January 17, 2013

Re: **Hazards Associated with Cleaning Products – Additional Information**

C: Board of Directors, District Service Teams (DSTs), Provincial Services Team (PST)

ONA received copies of a Ministry of Labour (MOL) report and an air sampling report related to a complaint of symptoms from one of our nurses exposed to bleach fumes in her hospital workplace. These reports conclude that legal occupational exposure limits to chlorine gas were not exceeded during this specific sampling.

These reports do not resolve ONA's concerns. We have received independent reports of symptoms from around the province, including eye and skin irritation, headaches, light headedness, nausea, shortness of breath, etc. from at least five large hospitals and one midsize hospital. We asked John Oudyk, an expert from the Occupational Health Clinics for Ontario Workers (OHCOW) to review these reports (below). We continue to urge you to raise this issue at your Joint Health and Safety Committee, and to cite the following comments and reports:

I had a look at the MOL report and the AQE air sampling report you sent me. While the hygiene report has a number of issues with it, even if those issues were addressed, I don't think the bottom line would be much different, i.e. exposures to chlorine gas are likely significantly below the Occupational Exposure Limit (OEL of 1 ppm for 15 minute exposure or STEL – short-term exposure limit). My suspicion is that the first result (“<0.15 ppm”) is a misprint and should probably read “<0.015 ppm”, therefore, the levels are even lower than presumed in the MOL report. That being said, however, the fact that workers are reacting to the exposures seems to be undeniable given the reports you sent me. Thus, I think there is an obligation under the *Occupational Health and Safety Act* for the employer to address the symptoms, even if there is no legal obligation to address the concentrations of chlorine gas (Cl₂).

Since chlorine gas is the focus of the hygiene investigation, I looked up some facts about chlorine exposures to see if it would help determine if chlorine is really the causative agent. From the ASTDR guide for medical management of exposures to chlorine I found the following dealing with the odour threshold for chlorine:

Chlorine's odour or irritant properties are discernible by most individuals at 0.32 ppm, which is less than the OSHA permissible exposure limit (PEL) of 1 ppm. Chlorine's odour or irritant properties generally provide adequate warning of hazardous concentrations. However, prolonged, low-level exposures, such as those that occur in the workplace, can lead to olfactory fatigue and tolerance of chlorine's irritant effects” (see attached).

Thus, if the measured chlorine concentration is 0.015 ppm or less, such concentrations are quite significantly below the odour threshold. Therefore, if chlorine gas truly is the offending substance, at the concentrations measured, the chlorine gas should not even be detectable by workers using the wipes. This is obviously not the case (as widely reported in the e-mails you sent me), so then either the sampling is incorrect, or there is another substance present, which was not included in the air monitoring.

If it is the case that we aren't sure what exactly is being emitted, I would remind you of the CAW adjudication decision (*OHS 94-32*) years ago which has been summarized as:

The adjudicator held that in determining the likelihood of endangerment, it is not essential to require a precise determination of what agent produced by the work process is causing illness among the workers. In the Adjudicator's view, the notion of danger in Section 43 is broad enough to address adverse health effects experienced by workers even where the immediate cause is not yet known" (see summary attached – I have the full decision if you need a copy).

The MOL report is authored by an inspector with the help of an occupational hygienist – neither of the two is qualified to diagnose the cause of the symptoms reported. Someone with medical training would be more appropriate to evaluate the symptoms. In the ATSDR Toxfacts on Chlorine (see attached) it specifically states:

Exposure to low levels of chlorine can result in nose, throat, and eye irritation...In general, people who suffer from respiratory conditions such as allergies or hay fever, or are heavy smokers, tend to experience more severe effects than healthy subjects or non-smokers.

We would also add that based on our own experience (supported by literature), such exposures can also trigger asthmatic symptoms in those with pre-existing asthma (generally around 10 per cent of the population). Thus, even if the chlorine were the offending substance and the measurements reported are accurate estimates of the exposures experience, it may well be the case that workers may have significant health effects due to chlorine exposure, even if the exposures are in compliance with Ontario regulations.

Furthermore, it is widely recognized in the infection control literature on *C. difficile* that the use of chlorinated cleaning agents (while effective under certain conditions) presents hazards to workers using them, to patients also inhaling the odours, and can cause damage to certain surfaces (e.g. metal corrosion):

The problems posed by cleaning with hypochlorite solution (bleach) include corrosion and pitting of equipment and other surfaces over time as well as triggering respiratory difficulties in workers using the solution" (see attached).

Given the "general duty clause" to do everything reasonable in the circumstance for the protection of the worker, it would seem reasonable in the circumstances to use an alternative cleaner, which has been demonstrated to be as effective as chlorine but without the concomitant health risks.

The last item attached is an article which demonstrates the effectiveness peracetic acid sporicidal wipes for controlling C difficile. The article reveals that the switch to peracetic acid was made specifically because of the problems associated with using chlorine-based cleaning products. Perhaps this would be a simple alternative, which would satisfy infection control objectives and avoid the symptoms associated with the use of chlorine-based cleaning products?

Let me know if you need any further information or clarification.

John Oudyk, MSc CIH ROH
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If you have any questions, please consult your ONA Labour Relations Officer (LRO).