

# Exposure Study Highlights



The report confirms and catalogues chemical exposures that occurred over the years in every major department at GE.

The report, commissioned by a committee of former GE employees and sponsored by their union Unifor, confirms what the workers and their community have been saying for years - that the conditions in the GE plant in Peterborough, Ontario were a significant factor for an epidemic of work related illnesses among employees.

This project was undertaken to better inform the Workplace Safety and Insurance Board (WSIB) of the level of toxic exposures experienced by workers in order to allow previously denied compensation claims for occupational disease to be reconsidered and approved.

The group, called the Advisory Committee on Retrospective Exposures, made up of retired GE workers and led by two experienced health researchers, produced this revealing report about exposure conditions in the plant between 1945 and 2000.

The committee worked diligently for over a year, researching and gathering testimony from over 75 participants. At the same time, Unifor developed a data base of thousands of files including Ministry of Labour reports (MOL), joint health and safety committee minutes and other documents.

## Research team findings:

- GE workers were exposed to toxic and/or carcinogenic chemicals with little or no exposure controls;

These exposures involved more than 3,000 toxic chemicals, including at least 40 known or suspected human carcinogens. These chemicals were used in large quantities and handled directly often without proper protection. Among chemicals used and exposed to were asbestos, silica, arsenic, vinyl chloride, benzene, beryllium, chromium 6, formaldehyde, trichloroethylene, toluene, MEK, xylene, PCB, uranium, cadmium, butadiene, lead, epichlorohydrin, BPA, diesel exhaust fumes and many others.

- Asbestos was used in large quantities in many areas of the plant at a rate of about 500 lbs daily.
- Lead was used at a rate of thousands of pounds weekly just in the production of PVC pellets.
- Despite knowing about the harmful effects of asbestos since the 1920s and 1930s, GE had its workers handle, saw and grind asbestos materials often without respiratory protection or proper exhaust ventilation. In fact, for a time the company even sold lethal asbestos to workers and the community for 3 cents a pound to insulate their homes.
- Workers experienced daily exposures to solvents, welding fumes, epoxy resins, asbestos, PCBs, metal working fluids, beryllium and uranium.
- GE workers have exhibited acute and chronic health symptoms and disproportionately high cancer rates.

## Examples of hazardous exposures and conditions in the plant:

- Extensive welding and grinding operations fabricating huge breaker tanks in confined spaces. Larger parts would require as many as 10 welders to work on a piece for weeks. This generated large clouds of welding fumes consisting of a complex mix of gases and heavy metal fumes and grinding dust in building 14 which would also migrate to the punch press operation in building 12;
- Workers sanding large lead Babbitt bearings bare handed while immersed in toluene up to their elbows in the Babbitt shop in building 8;
- Crane operators hovering over plumes of vapours from degreaser tanks, epoxy resin tanks and curing ovens in several departments;
- Workers draining and pouring large amounts of PCBs in the building of capacitors. Much of this carcinogenic material was spilled on the floors and on workers' clothing. This was then followed by welding on caps on the capacitors;
- Women engaged in detailed up close soldering work exposed to solvents and soldering fumes containing lead and/or cadmium in Drive Systems in building 20;
- Workers "squeegeeing" wet epoxy resin from large coils after resin dipping while being baked in ovens;

- Employees grinding and sanding hardened epoxy resins from various electrical components, creating dense clouds of dust without local exhaust ventilation or respiratory equipment;
- Workers hand sawing asbestos boards generating large amounts of dust without proper respiratory equipment or local exhaust ventilation;
- Machine operators using large amounts of machining fluids and cutting oils during machining operations, and use of rags soaked in toluene to wash down large metal surfaces (25' to 40').

### **Other factors driving widespread exposures:**

- Toxic contamination/exposures were widespread because the ventilation system operated under negative air pressure, causing contaminants to migrate to other departments and areas as most of the plant was open concept. In addition, work processes within departments took place in close proximity, exposing bystanders to contaminants/exposures from different processes.
- Up until 1988 the plant was run on a piece rate basis, as opposed to an hourly wage rate. This system of work organization puts workers in a compromised position; work harder to make your piece rate or work safely. In this type of system safety often takes the back seat.
- The report provides a detailed description of 22 major departments, including descriptions of the various production processes in each. The report also describes the steps in the production process, the materials or chemicals used, the volume of the product being produced, the amount of chemical/materials being used, the form it takes, how the materials may be transformed into other toxic by-products, the likely exposure points and the availability of exposure controls. While this project does not assign precise quantitative measures, it was possible to infer the extent of exposures from the nature of the production process as described.

### **Methods and Purpose**

#### ***Purpose of the retrospective exposure study:***

The retrospective exposure profile study reconstructs the nature and extent of exposures experienced by GE workers who have now developed various work-related cancers and other illnesses. This was undertaken in response to the WSIB's decision to reject their claims, some of which have been in and out of adjudication for 10 to 20 years. Many of the workers who originally filed claims have sadly since passed away.

#### ***Risk Exposure Matrix:***

Using the basic concept of industrial hygiene, researchers formulated an exposure risk matrix to identify a constellation of factors that are known to influence the extent and nature of exposures to chemicals and physical agents in the production process. By obtaining a detailed description of how work was performed the study is able to identify exposure risk factors. Such factors included: amount used, how it was used—direct/indirect, frequency and length of time used, its physical state, and exposure controls used.

### ***Methodology:***

We utilized qualitative participatory research methods as the most appropriate means of gathering rich and in depth information about the various production processes and working conditions including the effectiveness of exposure control measures. We formed a major focus group that served as a vehicle for generating information from within and without the permanent focus group. In addition to the Advisory Committee, the process involved in depth interviews with individuals and groups of workers conducted in person or via telephone. In total, approximately 75 employees participated in the study. These workers had a wide breadth of knowledge of the plant and its various processes and products. Their job experience at GE ranged from 35 to 40 years of service. Collectively their work experience represented nearly 3,000 work years at GE.

### ***Verification:***

Verification and validation came through two sources: Firstly, the dynamics of group discussions proved a major source of validation and a check against error in recollection and bias. Information provided would be challenged within the focus group until a consensus was reached. Secondly, validation took place through a process of triangulation of alternate sources of information from MOL inspection reports, JHSC minutes, employer H&S reports from consultants, reports of adverse symptoms, exposure incidents and industrial hygiene literature reviews. This gave the research team great confidence in the validity and reliability of the information used to construct the exposure profiles.

In conclusion, it must be reiterated that manufacturing in the 20th century was characterized by an historic intersection of the industrial and chemical “revolutions” The GE plant in Peterborough is a classic example, in design and function, of that dynamic social experiment. As such, workers at GE were both participants in, and witnesses to, the horrid working conditions associated with this historical pairing – and its significant toll on workers and their families.

The CGE retirees’ commitment to, and passion for this project, and their desire for justice for CGE families, is a reflection of their humanity and concern for workers, in the face of personal health challenges and losses.

To access the full report visit [unifor.org/healthandsafety](http://unifor.org/healthandsafety).

