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CONTROL OF CHEMICAL HAZARDS IN THE WORKPLACE

Mr. William M. ("Bill") Ward (deceased) was a Founding Member and an Emeritus Member of AIHA Manitoba. Prior to its privatization as Enviro-Test Laboratories, this facility located at 745 Logan Avenue in Winnipeg was a Manitoba Government operation known as the W.M Ward Laboratory. Mr. Ward is remembered fondly by his many friends and colleagues in the Industrial Hygiene profession.

The photo below was taken at the Ward Laboratory and shows Mr. Ward with some of his colleagues.

Ladies, left to right: Mrs. Cessford, Mrs. Holloway, Gwen Finch, unknown.
Gentlemen, left to right: Jim MacKay*, Ken Hawkins, Bob Archibald, Bill Ward, Ken Ellis, Mike Lysyk, Will Grieve, Andy Lynch, Eric Michnowski.

*** Jim MacKay is also an Emeritus Member of AIHA Manitoba.**

A HISTORICAL PERSPECTIVE OF INDUSTRIAL HYGIENE IN MANITOBA

William M. Ward

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Industrial Hygiene in Manitoba began in the Thirties with the need to reduce Silicosis compensation costs in the mining industry. The War and subsequent industrialization gave sudden impetus to the need for services to industry and the medical professions. Nineteen forty-two saw the introduction of laboratory facilities and field investigations, coupled with medical, nursing, chemical and engineering consultation services which set the basis for a modern program. Changes in the types and exposures of chemical hazards over the five decades are reflected in legal improvements and technical sophistication.

From a presentation by William M. Ward, B.A., M.P.H., former Director of Environmental Control for the Province of Manitoba; at the Second Annual Occupational Health Symposium, sponsored by the Manitoba Section of the American Industrial Hygiene Association; in Winnipeg, November 19, 1987

Just as the North Saskatchewan joins the South Saskatchewan to come into Manitoba as the Saskatchewan River, in like manner two streams combined in the 1940s to form the mainstream of Industrial Hygiene in the province.

The first stream began in the North with the start of hard rock mining and the risk of silicosis. In 1929 the first Chief Sanitary Inspector, Mr. John Foggie, noted in his report:

"It is worthy to note that the desire of the mine owners is to establish as nearly ideal health conditions as possible, and with that end in view have cooperated willingly with the health authorities."

SANITATION was listed as "one of the newer activities of the Department of Health." The chief concerns were with communicable diseases - measles, typhoid fever, smallpox and infantile paralysis. Emphasis was on a lack of natural light and ventilation. Certain industries were classified as OFFENSIVE TRADES, foreshadowing the emergence of air and water pollution twenty years later. In 1931 all mine workers and railway construction workers were inoculated against typhoid.

This also saw the start of silicosis x-ray surveys in Mines. A cynic might conclude that this activity was prompted by the need to keep workers with bad chests from Quebec and Ontario out of the province, lest they be a burden on the Workmen's Compensation Board.

Industry, such as there was, was a problem of nuisances and insanitary conditions. A typical solution was the treatment and sterilization of wiping rags.

INDUSTRIAL HYGIENE, per se, is first mentioned in annual reports in 1935. This was in connection with the use of sand blast in three

establishments and reports submitted on the protection afforded operators.

In 1937, the first Division of Industrial Hygiene was established with a Medical Director (Dr. Morley Elliott). Over the years it has changed back and forth between Division, Bureau, and Section several times. An agreement with the Workmen's Compensation Board arranged for the examination of all men engaged in prescribed occupations in the mining areas. Other places such as foundries and monument workers were not being done, although included in the regulations.

Of 983 men examined, 40% were new workers. Six percent of the new applications were rejected (with evidence of active or old TB, fibrosis, etc.). Of the old miners, 60 men had definite fibrosis; the pool from whence came future compensation cases.

There was good cooperation with the Department of Labour, whose inspectors unearthed many problems for which there was no answer except some advisory service to physicians.

That year's report to the Legislature concluded:

"There exists a definite need for a wider application of public health measures as applied to the industrial worker. The lack of adequate industrial laboratory personnel and equipment has restricted largely our effort to give this wider service to industry, fast becoming an increasingly important part of preventive medicine."

The next year this one-man Bureau complained again it could only act in an advisory capacity to physicians . . . .

"It will not be until we are fully equipped to analyse questionable substances, test potentially harmful atmospheres or have the personnel to make adequate industrial surveys, that the Division can take the proper place in the field of industrial medicine."

May I comment that at that time there was a very pervasive attitude of paternalism by government with respect to such matters. It never occurred to them to require industry to take the initiative in identifying health hazards, poisonous substances or such. Partly because of the small size of the industrial units and the lack of professional support it was a government prerogative for many years, whereas in the USA specialized insurance companies developed the necessary services.

The influence of the federal government starts to appear on the horizon in 1940 as the "Dominion" Division of Industrial Hygiene supplies thousands of pamphlets giving information on various industrial hazards for distribution. It is of interest that some pamphlets were sent to principals of high schools for teaching purposes. "THE SCHOOL CHILDREN OF TODAY ARE THE WORKERS OF TOMORROW" was the slogan . . . It is noted that the increase in industry due to wartime manufacturing generated requests to expand the provincial bureau. Although 27% of the total male staff of the Health Department were in the armed forces, all facilities of the Department were placed at the disposal of His Majesty's Armed Forces. Canada' s chief role was to supply munitions and other resources to the war effort. The medical director and the sanitary inspector report visiting aeroplane plants and munitions manufacturing plants.

NOW WE COME TO THE OTHER STREAM ! It has its headwaters in Ottawa, the nation's capitol, where a PhD. by the name of Kingsley K. Kay was putting together a technical team whose purpose was to police a clause which appeared in every war contract relating to the conditions of the workplace and the health of workers. Remember that contracts were let for bread, clothing, paper and "what have you" as well as for munitions, shells, luminous aircraft dials and the aircraft themselves. This team consisted of three persons one for Quebec and the Maritimes, one for north-west Ontario and the prairies, and one for British Columbia. Presumably southern Ontario could look after itself!

I was one of that team.

Our training consisted of a stint at the Harvard School of Public Health with field work in munitions plants and a shipyard in New England and a lead mine in Missouri. This was just after Pearl Harbour amid the frenzy of Americans to get into the war effort, and only our so-called 'diplomatic status' kept us from being drafted into the U.S. Army! We did spend one long day at an induction center until Kingsley L. Kay bailed us out. The rest of our class were naval officers bound for the south seas.

The crash training over, the team assembled in Ottawa on May 27th, 1942, to be sworn in at the Privy Council, and in early June I (who had drawn the prairie assignment) arrived in Winnipeg from Toronto on one of the coldest days on record. Before long a fairly complete Industrial Hygiene Laboratory had been set up at 320 Sherbrook Street (the corner of Sherbrook and Portage) in a large old residence which housed the Manitoba Department of Health. Our first location was a room on the third floor, about the size of your typical bedroom. In fact, it was a bedroom! We soon moved to the basement with more space, but where the dust from the street contained far more lead than any of the samples we began to test!

The provincial report states:

"In June 1942, we were fortunate to obtain the loan of a qualified chemist from the Department of Pensions and National Health , Ottawa."

We also had some help from a new sanitary engineer, who joined the Section of Environmental Sanitation; and an Industrial Nurse, Miss Peggy Hart, (later to become Head of the School of Nursing, University of Manitoba.)

THESE TWO STREAMS WERE NOW JOINED AND THE SUBSEQUENT DEVELOPMENT OF THE SERVICE WAS DICTATED BY THE CONTINUING GROWTH OF THE INDUSTRIAL SECTOR IN MANITOBA.

Being wartime, there was difficulty obtaining some equipment due to priorities imposed by the U.S.A., but this only provided a challenge to get around the problem. We resorted to scrounging and making our own equipment. I recall much cooperation with other agencies such as the Manitoba Cancer Treatment and Research Institute, the R.C.M.P. lab in Regina and the Ottawa labs. Another interesting feature was the excellent cooperation from our opposite numbers in the U.S.A., both state and federal. We were treated by the Americans just as if we were one of their states, especially in the matter of training personnel.

Concurrently with all this, new regulations came out under the Factories Act on the Labelling of Products Containing Benzol, and also concerning LEAD and NITROUS fumes. The Health Act produced regulations on the sanitation, ventilation, lighting, and dust conditions in workplaces; while physicians were required to report cases of suspected industrial disease. At least 22 industrial concerns in Manitoba had medical and nursing services.

Nineteen forty-two saw the start of x-raying all foundrymen.

A proposal was made and eventually instituted to compensate for dermatitis in the aircraft industry.

Soon the activities began to switch from topics like poor ventilation1 dust and dermatitis to specific hazards as benzol, carbon tetrachloride, dopes and aviation glue, halogenated hydrocarbons, lead, noise, radium, radon gas, welding fumes, carbon monoxide, acid fumes, excess humidity and spray painting. Of course, the advent of a laboratory

facility opened the door for specific investigations of problems which just had been lying dormant, waiting for such an event.

The laboratory soon began to accomodate the Provincial Coroner; the Departments of Agriculture, Mines, Labour; the Medical College; the Water & Sewage people and even the Treasury Department - they insisted we test the floor wax bought for the government floors! Despite the fact that it had been established for the war effort, the very first field trip from the lab concerned snails blamed for Swimmer's Itch at Gull Lake; and the second concerned silt in the Whitemud River, blamed for the very poor ice on the municipal curling rinks!

In 1944 we find the first mention of mercury as an occupational problem. It involved seed treatment. It is interesting to note that the development of testing facilities for mercury resulted later in our ability to provide the first laboratory services with respect to the mercury-in-fish scare. This is how the system worked - the need for testing well water suspected of causing water-belly in turkeys resulted in the Department of Agriculture buying us our first spectrophotometer, which was then used to develop our mercury analysis. (I think it was about that time that we caused the shut down of a thermometer manufacturing plant because we discovered traces of whitefish in their mercury).

Can you imagine such problems as carbon tetrachloride vapours in the cleaning of parachutes? and radioactive materials used in aircraft manufacturing? We used to go into plants at night with ultra violet lamps to find the radium paints which were spilled in odd places around the premises. I recall doing a lot of air testing for carbon monoxide in blacksmith shops, foundries, garages and on winter construction jobs. The "portable" testing equipment weighed about 15 pounds, and was manually operated.

In 1945 we began doing monthly routine stippled cell counts on the blood of workers exposed to lead. Thousands of tests were done. I

mention this to note that the aggregate of these tests for each plant constituted a measure of the lead control program. That is, we were using the worker's bodies as collectors to measure the effectiveness of the engineering controls. I presume this would be a "no, no" these days!

A very significant event occurred in 1948 with the start of the Federal Health Grant system. This allowed us to train professional and technical staff and to initiate some research projects, but notably it assisted us in the capital cost of sophisticated laboratory and field testing equipment. At one time about 90% of the new equipment in the laboratory was obtained with Federal Health Grants. Also in '48 the facility (offices and laboratory) moved to the "Old Normal School" on William Avenue. In fact the lab has been in seven locations around the city. The value of this is that whenever we moved we were able to secure much equipment otherwise denied to our operating budget. If a piece of equipment could be classified as a "fixture", it was paid for by Public Works as part of the construction project. Many things, such as autoclaves, dish washers, centrifuges, cooling tanks and spectrophotometers ended up as "fixtures", simply by making a permanent electrical connection to the wall.

One of the distinct features of such a facility in a small province such as Manitoba1 is that you do a lot of cooperating just to stay alive and grow. I mentioned the extra things expected of us such as testing floor wax. We got involved in the analytical and technical problems of Food Control (making Milk Thieves for the Inspectors), Disease Control (investigating cyanosis in infant babies), Dental Services (making experimental tooth powder which was tried on the students at the Indian School -we put in so much peppermint the kids ate it like candy) and the Coroner (mostly investigating the cause of suicides).

I had my first experience of testifying in court at a Coroner's Inquest about how much cyanide was in a sample of stomach contents. Wishing to impress, I gave a lofty 'scientific' answer. The Coroner said in

exasperation - "We don't understand that stuff. Tell me in plain English". I replied "There was enough to kill a horse." Whereupon he said "Why didn't you say that in the first place."

By 1949, silicosis detection was still a big item. Two thousand four hundred and nine miners and 1074 foundrymen were examined. The reports also refer to seed treating. chrome poisoning, xanthates, hydrogen gas, x-ray shoe fitting, radiation in meat packing, degreasers and fiberglass.

The next year (1950), the big flood overshadowed all other activities for several months. We became experts on disinfectants, and, after the waters receded, on deodourizing methods for basements, frozen food locker plants and the like.

In 1952 the Bureau moved back to 320 Sherbrook Street, but with expanded quarters. It is of interest that this year marked the first recorded involvement of a labour union in occupational health - it related to foundry fumes. Over the early years organized labour had been strangely silent about this; both with respect to government and in the collective bargaining process. It has obviously changed.

That year highlighted a Dust and Ventilation Survey of all foundries in the province.

The stippled cell counting continued; and to it was added routine urinary coproporphyrin tests as a measure of lead absorption.

The next year a study of shoe-fitting X-ray devices in Greater Winnipeg resulted in their withdrawal from use in all stores. The fact that my new father-in-law was Head of the Shoe Department in Eatons luckily facilitated the action, since he assured me that a good salesman didn't need such a gadget to do his job.

The annual report noted that:

"an increasing number of Manitobans are being exposed to radiant energy in their work. The film badge service of the Manitoba Cancer Treatment and Research Institute was being used."

It added:

"The day is however coming when exposure standards will have to be set for the province and the responsibility for maintaining same made the direct responsibility of a specific agency."

As a sequel to this - a few years later when such a specific agency was being contemplated. there was some obvious rivalry as to who would get the plum job of Director (normally this level of management was reserved to the Medical profession). Top management hesitated to make up its mind. As a stop gap, it was suggested that the whole service be farmed out to the Cancer Treatment and Research Institute on a contract basis, inspection services and all! Thus the Radiation Services became one line in the Bureau of Industrial Hygiene budget, and remained that way for many years. It may still be done that way. Twenty years later, when I suggested to the Minister involved, a certain Sid Green, that we could run the whole Government that way, he laughed and said "Not yet!" But he agreed that the arrangement for Radiation Protection should continue as it was.

The Bureau staff remained static right up to 1957; with-

a Medical Director (part-time),
one Chemist-Industrial Hygienist,
one Lab Technician,
a part time Industrial Hygiene Engineer from Ottawa,
two Nurses, and
an Office Steno.

This is when expansion began in earnest. Federal Health Grants supported the appointment of more chemists and technicians, some of

whom concentrated on Industrial Hygiene. This was when the Lysyks, Grieves, Sorbas, Eliases, Deonarines, MacKays, Nikkels, Bawdens, Chorniuks, Jakilazeks, Prokopankos and many others joined and made their various contributions to the on-going cause. It has wandered in and out of different Departments and been joined by many more persons. but the ground work has been well laid.

A NEW ERA IS ON THE HORIZON!

LEGISLATION IS CATCHING UP WITH THE TECHNICAL SECTOR.
LABOUR AND MANAGEMENT ARE LEARNING TO WORK TOGETHER.
THE REAL CHALLENGE OF INDUSTRIAL HYGIENE LIES BEFORE US.

THE STREAMS OF THE 30s AND THE 40s HAVE BECOME A BROAD RIVER.

Thank you.