NOISE CONTROL IN B.C.

by

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ABSTRACT

Three sections of the Workers Compensation Board of British Columbia are engaged in acoustical activities. These three are the Hearing Branch and two sections of Prevention Services, the Noise Control Section and the Engineering and Research Section. In this article Virginia Tupper, Manager of the Noise Control Section from its inception to 30 May 1981, covers the history and current activity of her section.

British Columbia has a workforce of 1.3 million people in an area of 948,600 sq. km. One in every six B.C. workers is exposed to an 8 hour equivalent noise level (Leq_8) in excess of 90 dBA. In the wood products industry, approximately two out of every three workers are exposed to noise levels in excess of the current criteria.

The Workers' Compensation Board of British Columbia (W.C.B.) is responsible not only for developing noise control regulations and inspecting firms for compliance purposes, but also for adjudicating hearing loss claims and providing aural rehabilitation services.

We rely on an "inquiry" system for resolving disputes concerning inspectors' noise control orders. The W.C.B. may penalize firms for failure to comply with noise control orders and regulations. Noise control orders are normally only written where a known and proven control exists. In disputed cases, the employer may make a formal appeal documenting the reasons why noise control measures are not considered feasible. The appeal is heard and resolved within the W.C.B. Penalties are used infrequently and primarily with the small percentage of employers where cooperative compliance is lacking.

Regulations requiring the engineering control of noise have existed since 1972. Based on the American model, a 90 dBA criterion was established for an 8 hour exposure with a 5 dBA doubling rule. This 1972 regulation said, in part:

12.28(1) When workmen are required to work in areas in which noise levels exceed the criteria for permissible noise exposure:

(a) the employer shall first take appropriate measures to reduce the noise intensity to approved levels, or

(b) if it is not practical to reduce the noise to approved noise levels, or isolate the workmen from the noise, the workmen shall wear personal protective equipment which will effectively protect their hearing.

These early regulations were enforced by W.C.B. Accident Prevention Officers and Industrial Hygiene Officers as an addition to their regular duties.

The actual implementation of engineering controls by industry varied a great deal throughout the province. Major efforts were undertaken by some firms on their own initiative or in response to noise control orders. Other firms made one or two efforts at noise control often with limited success. The majority of firms continued to rely on the provision of hearing protection devices as a means of protecting workers. Until recently, professional acoustical engineering firms were rarely employed by B.C. industry. Without their expertise, firms often made costly mistakes in attempts to implement noise control measures on their own. This led to a high degree of skepticism and reluctance to undertake further measures.

In 1979 the Board revised its noise control regulations retaining the 90 dBA criterion but switching to a 3 dBA doubling rule. In addition, the word "practical" was omitted.

The (July 1, 1980) regulation reads as follows:

> 13.21(1) When a worker's exposure to steady state noise or impact noise or both exceeds the permissible noise exposure levels the employer shall institute engineering controls to reduce the noise levels to or below the permissible values.[1]

Concurrent with revisions to the regulations, the Board reviewed the effectiveness of its existing approach to promoting noise control. Recognizing the need to achieve compliance at a faster rate and with a greater degree of consistency throughout the province, two major but highly divergent possibilities were explored.

The first was the application of supplementary assessments to industry based on the estimated percentage of workers exposed to excessive noise. For example, a per capita supplementary assessment would be levied on employers for all workers exposed to noise in excess of 90 dBA. This assessment would then be doubled with each 3dBA increase in exposure. The W.C.B. is empowered to levy these supplementary assessments through Section 43 of the Workers' Compensation Act and it may do so whether or not hearing protection is worn by workers.[2]

The second option available to the Board was the creation of a special section with the primary objective of promoting noise control. Since this was a more positive approach requiring fewer additional staff than the assessment scheme, it was chosen late in 1979. Seven Noise Control Officers and two Acoustical Engineers were hired in April 1980 to form the new Noise Control Section of the Board.

The Noise Control Section's first task was to identify priority industries based on the size of the work force and the average noise exposure. Sawmills and planer mills were assigned top priority for noise control measures. In addition, the Board decided to adopt different approaches with large versus small employers in the sawmill industry. Based on the assumption that large

firms have the technical and financial resources to work towards noise control on their own, senior managements representatives from the thirty largest employers in the sawmill industry were given the option of developing corporate noise control compliance plans. The alternative was to submit to the traditional approach of inspections and order writing.

The steps in a corporate compliance plan as presented to large industry are outlined below:

1. Survey noise exposure (Leq_8) of workers in all operations.

2. Select priority areas for noise control based on number of workers and dBA levels.

3. Develop a time-phased compliance plan to achieve 90 dBA over a maximum five year period.

4. Submit the plan to the Noise Control Section for review by Manager and Acoustical Engineers.

5. Implement the plan and provide semi-annual progress reports.

Schematics or blue-prints for each operating location showing Leq_8 values for each workers, noise control measures implemented to date, and proposed noise control measures for the current year are submitted with each plan. This reduces the number of field visits required for our acoustical engineers to evaluate the company's plan. In addition, the engineers may use this information to suggest solutions that have been successful at other similar operations.

The semi-annual progress reports from the firms list successful noise control measures implemented and reductions in noise exposure achieved. This provides a measure of effectiveness for the individual firm and for the compliance plan approach in general. Noise Control Officers do not inspect large firms to ensure that the stated measures have been implemented unless there is a worker complaint. They may, however, make arrangements to visit the operations and take photographs of successful measures to add to our "data bank" of noise control solutions. Successful noise control projects with wide-spread application are publicized through the Board's Health and Safety Digest [3,4,5] thus providing free publicity for the firm and expanding the knowledge base of the 32,000 employers who receive the publication.

At present, in British Columbia, the thirty largest sawmill employers, representing 70% of the work force have adopted and are successfully following the compliance plan approach. The majority of these firms have employed consulting acoustical engineers to develop their program or have arranged for technical upgrading of their engineering staff. The largest firm has hired a permanent noise and vibration specialist. The majority of large firms have already implemented the obvious noise control solutions such as machine and operator enclosures. They are therefore working on an experimental basis to control the more difficult noise problems remaining in sawmills eg. edgers, resaws, and head saws.

In exchange for developing and adhering to a compliance plan, the large employer is freed from the constraint of having a Board Officer write an order on one of his operations. This allows the employer to work towards compliance in a planned and logical manner rather than as a "knee jerk" response to a noise control order. As stated earlier, inspections are only made at large operations in response to worker complaints that the plan is in fact not being implemented. To date, no complaints have been filed. Both the International Woodworkers Association and the B.C. Federation of Labour were advised in advance of implementation of the compliance plan concept and are aware of their right to request an inspection.

In summary, the advantages of a compliance plan approach from both our perspective and that of industry are listed below:

1. Maximizes inspection converage of working environments.

2. Requires employers to plan for noise control in future.

3. Allows companies to develop their own expertise in noise survey work and noise control engineering.

4. Makes workers more conscious of the need for hearing protection and audiometric testing.

5. Increases the number of people working on noise control solutions thereby advancing the state of the art.

With the introduction of the compliance plan approach, our seven Noise Control Officers have been able to concentrate on smaller firms who do not have the financial and technical resources to achieve noise control on their own. At present there are 855 sawmill operations in B.C. Of these, 755 have fewer than 100 employees. Despite the large number of sawmills in this category, these firms account for only 25% of the work force in the sawmill industry. Until 1980, these 25% were often ignored as inspectors concentrated their limited resources on the 75% of the work force employed by larger firms.

Board Officers can now not only conduct noise surveys and write orders on these smaller operations but also advise them on the most cost-effective means of achieving compliance. If required, one of the two acoustical engineers accompanies the inspection officer to an operation and offers technical advice. In addition, the inspection officer frequently provides technical brochures,[6,7,8] information on where acoustical material may be purchased, and a list of similar operations where successful measures may be viewed.

As an additional means of promoting compliance with noise control regulations, the W.C.B. recently sponsored a series of one-day seminars on "Noise Control in the Wood Products Manufacturing Industry" featuring Dr. John Stewart, Director of Noise Control Services in Greensboro, North Carolina. Response to these seminars was excellent and a follow-up series featuring slides and case histories of successful B.C. applications is planned for this Fall.

In addition, our acoustical engineers are rapidly expanding the data bank of both successful and unsuccessful noise control applications in the B.C. wood products industry. The first in a proposed series of slide/tape presentations on sawmill noise control is scheduled for completion this Fall. Copies will be made available on a loan basis to industry.

In summary, we are encouraged by the response of both worker and management representatives to this new "cooperative" approach as opposed to the more coercive traditional model. Noise control coordinators have been appointed in most large firms, acoustical engineers are being increasingly employed by industry, manufacturers and suppliers of retrofit packages are responding to the increasing demands for quieter equipment. The number of individuals actively working towards the goal of 90 dBA now greatly exceeds the ten individuals comprising the Noise Control Section.

There is a spirit, of working together towards a common objective.

After one year's experience with the new program, we are confident that we will achieve our goal of reducing the percentage of workers exposed to excessive noise in the sawmill industry from 61% in 1981 to 10% or less by 1986. Should the cooperative program fail, we have recourse to the negative incentive of supplementary assessments. Perhaps this inherent threat is in part responsible for the positive response to date. At this time, however, we are quietly optimistic that compliance can and will be achieved through the primary approach of mutual cooperation.

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