DEVELOPING NOISE CONTROL LEGISLATION (SILENCING THE CRITICS)

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1. INTRODUCTION

Environmental noise has been defined as unwanted sound that is annoying, distracting, or physically harmful. The World Health Organization believes that environmental noise can have serious affects on people such as; interfering with daily activities at school, work, home, and during leisure activities and even affect health defined as *"a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity"* [1]. Today, environmental noise remains an important issue in Alberta. With increasing rural population and the growth of industrial development, it is essential to have effective industrial noise control regulations in place to minimize the impacts on the environment.

2. BACKGROUND

As an emerging issue crossing all industry sectors, in 1974 the Environment Council of Alberta (the Council) took on the task of examining noise legislation that may be appropriate for Alberta and made recommendations to the Minister of Environment. The Council appointed a committee of experts, many from the ranks of the Canadian Acoustical Association, to assess the issue. Working independently, the expert committee produced a two-volume report in 1979 titled *"Noise in the Human Environment"*. The committee was able to identify a number of areas to address and made suggestions to the Council on how they should deal with these concerns. A key intent of the expert committee's report was to spark public reaction. Although the Council did not necessarily support all the views of the committee, it did believe that the points raised were important and should be considered by the people of Alberta. Ultimately, the Council held a series of public hearings throughout the province to obtain reaction to the subject of noise pollution. Special attention was given to noise sources and problems, the effects of exposure to noise on health and the human environment, and technological and other practices that may be adopted to control noise levels and resolve problems.

The comprehensive findings included 43 recommendations and contained information on the impacts of noise (auditory effects and economic effects), noise sources (transportation, work-related, domestic, recreational), and creation of quiet charter (right to quiet, health, education and research programs, and engineering controls). These findings were presented to the government of Alberta. Three of the recommendations related to the energy industry and suggestions for revisions to the EUB Noise Control Directive (Directive) were made. The Directive at that time was a one-page document that required energy industry facilities meet 65 dBA daytime or 55 dBA nighttime sound pressure levels 15 metres from nearby residences. The recommendations were:

1. That noise levels be measured at the property line of an energy development,
2. That permissible sound levels be lowered for permanent facilities, and
3. That, in rural areas, a noise standard of 5 dBA Leq (24) above ambient noise levels be adopted.

3. REVISING REQUIREMENTS

Based on the recommendations in the Council's report, the EUB began to re-evaluate its Noise Control Directive (Directive) taking into consideration that measuring and controlling environmental noise was going to take a much more rigorous approach than the earlier versions. The EUB believed that to be truly effective the new regulatory requirements would have to contain several important elements including:

- Statutory mandate and authority: The EUB, as a regulatory body, needed to have in place the legislative authority to create noise guidelines. This was determined to exist under the Oil and Gas Conservation Regulations, Hydro and Electric Energy Act, and the Pipeline Regulations.
- Clearly defined goals: The goals of the new guidelines were to provide clarity and certainty to affected parties including consequences for non-compliance, to have easily understood technical components, provide a consistent cost effective approach, contain a clear process for its implementation and identification of remedial action(s), and use of best practical technologies to minimize the impacts of industrial noise.
- Acceptance by industry: To assure acceptance of the guidelines the involvement of stakeholders in regulatory development would be necessary. Also there needed to be consistency with similar requirements in other jurisdictions. Finally a mandatory review process would be necessary to incorporate any improvements in technology and new understandings of industrial noise.

- Technical integrity: The Directive must be consistent with accepted acoustical standards, have specifications for instrumentation, site selection for instrumentation, specific acceptable sound levels and appropriate methodologies for the analysis of monitoring results.
- Enforceable: The Directive would have clearly defined compliance targets, appropriate consequences for non-compliance and reasonable expectation and timelines for noise mitigation programs as agreed to by all parties.

To ensure these elements would be addressed appropriately, a diverse task force was established comprising of academics, acoustical engineering consultants, the energy industry, provincial government, members of the public and EUB representatives to develop a comprehensive noise control guide. The objective was to develop an effective guide for industrial facilities taking into consideration the human psychological response to environmental noise and the many technical challenges that were faced by the energy industry.

After many months of dedicated work, the task force presented its recommendations to the EUB. The EUB, in turn, adopted the task force's recommendations and published its first comprehensive noise control regulation, *Interim Directive (ID) 88-1* and accompanying *User Guide 38*. The new policy provided a consistent and fair process to ensure noise impacts were considered in the design of a facility. It also attempted to take a balanced viewpoint by considering the interests of both the nearby residences and the licensee of the facility.

4. FUTURE OF EUB NOISE CONTROL DIRECTIVE

Since the release of *ID 88-1*, a great deal has been learned about industrial noise, its complexities and management resulting in several revisions. Coincidentally, as required by the periodic mandatory review process, the current version of the Noise Control Directive (*ID 99-08*) is undergoing an update by a multi-stakeholder review committee. The following are some of the key areas that are being considered for the next version of the Directive and Guide:

- Mandatory use of complaint investigation forms – In order to determine the nature of the noise concern, the use of the complaint investigation form is required to capture representative conditions when noise from an energy facility is a nuisance. The investigation form may convey important information such as the characteristic of the noise and weather conditions that may be important during a survey.
- Recognition of low frequency noise (LFN) – It has been determined that low frequency noise may exist in certain complaint situations where the comprehensive sound level is satisfactory but the concern is a dominant or resonant low frequency resulting in a high degree of annoyance. The new Directive outlines how the presence of LFN is to be determined and what corresponding adjustments must be made to the comprehensive sound level to determine compliance with EUB requirements.
- Consideration for wind turbines – Wind turbines posed an interesting challenge with regard to the potential for noise from the turbine and blades. Existing requirements for noise modeling and noise surveys used for energy facilities were inadequate for wind turbines. In hopes of better regulating the noise emitted by wind turbines, the review committee is developing modeling parameters and noise survey guidelines to be incorporated into the Directive.
- Standardized criteria for modeling – Differences occur in predicted noise levels depending on which noise propagation algorithm is used in modeling. As a way of providing more consistency for modeling results, the Directive will include a list of parameters that the model must incorporate and input conditions that must be used in determining predicted noise levels at the receptors.
- Process for consecutive monitored nights – To ensure representative conditions have occurred, multiple nights of monitoring may be a solution where there is uncertainty regarding what representative conditions might be prior to monitoring or where the licensee and residences have agreed prior to the survey. In cases where 2 or 3 nights are deemed to be representative of noise complaint conditions, the worst-case condition is used to determine compliance with EUB requirements.

5. CONCLUSION

As the Noise Control Directive evolves, it continues to serve industry, the public and the EUB as a useful tool to manage environmental noise. The involvement of a multi-stakeholder committee in the development of the Directive and a balanced viewpoint that considers both industry and residents is the basis for the effectiveness and acceptance of the Directive as a fair regulatory process. A logical next step in controlling industrial noise is to make it universal throughout the province. This would require meeting the elements noted above by the appropriate authority.

REFERENCES

[1] Environment Council of Alberta (1982). Public Hearings on Noise in Alberta.

[2] DeGagne, D. C. (1999). The Evolution of Environmental Noise Legislation for Alberta's Energy Industry Over Three Decades. Journal of the Canadian Acoustical Association, vol27, 76-77.

[3] Noise Control Directive ID 99-08 (1999), Alberta Energy and Utilities Board