ACOUSTICS AND NOISE CONTROL IN CANADA

THE CANADIAN ACOUSTICAL ASSOCIATION

L'ACOUSTIQUE ET LA LUTTE ANTIBRUIT AU CANADA

L'ASSOCIATION CANADIENNE DE L'ACOUSTIQUE

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CONTRIBUTIONS

Articles in English or French are welcome. They should be addressed to a regional correspondent or to a member of the editorial board.

SUBSCRIPTIONS

Acoustics and Noise Control in Canada is distributed free. To have your name put on the mailing list, please contact the Noise Control Division, Environmental Protection Service, Department of the Environment, Ottawa, Ontario K1A 0H3.

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CONTRIBUTION

Vous êtes invités à faire parvenir des articles en anglais ou en français. Prière de les adresser à un correspondant régional ou à un membre de la rédaction.

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INSTITUTE COMPLETES STUDY OF NOISE IN WESTERN CANADIAN LOGGING OPERATIONS

The Industrial Research Institute of the University of Windsor has reported to the Forest Management Institute of Environment Canada on a study of the exposure to noise of operators of mechanized equipment in selected logging operations in British Columbia.

Father Robert Howell's group analyzed and reported on some thirty-six machines whose operators were "ear-bugged" by Professor Howell last July to record their noise exposure while working in the B.C. forests.

The study was a continuation of similar work carried out in Ontario and Quebec logging operations during the summer of 1972 by Dr. Zygmunt Reif and Professor Howell: the results of the latter were made public by the Forest Management Institute in June, 1973.

For information contact:

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and General Manager
Industrial Research Institute
of the University of Windsor
Telephone: (519) 253-8862

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UNIVERSITY OF WINDSOR RECEIVES GRANT FROM THE ONTARIO GOVERNMENT

The Ontario Government's Ministry of the Environment has awarded a SWEEP grant to the Mechanical Engineering Department, University of Windsor, and a research contract to the Industrial Research Institute.

The SWEEP grant covers for the summer months the salaries of five students who will investigate the noise produced by transport trucks near the Vehicle Inspection Station on Highway 401. Under the direction of the faculty members of the Mechanical Engineering Department the students will measure noise and obtain operating data concerning transport trucks in order to assess the relationships between truck noise and various operating conditions. This information will assist government officials in their assessment of the effects of proposed noise regulations for heavy trucks.

The research contract awarded to the Industrial Research Institute of the University of Windsor is for the development of a method of evaluating the noise characteristics of replacement mufflers for passenger cars. Dr. Zygmunt Reif, assisted by two graduate students - William Leistner and Gilles Delaire - will review the scientific literature on motor vehicle mufflers and carry out experimental work at the Institute's Exhaust Noise Laboratory. The purpose of the research is to develop a quick, economical method of evaluating replacement mufflers so that vehicle owners may select replacement mufflers whose noise performance will allow older vehicles to meet the proposed noise standards for the operation of passenger vehicles in Ontario.

For information contact:

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SEMINAR ON NOISE IN INDUSTRY

A three day seminar on noise problems encountered in industry will be held on October 7, 8 and 9 at the Edmonton Inn, Edmonton, Alberta. The seminar which is sponsored by the University of Alberta Extension Department will feature knowledgeable lecturers from government, industry and university.

The material in the seminar will include introductory acoustics, subjective acoustics, noise control for mechanical equipment indoors and outside, personnel protection, examples of specific problems and solutions.

This seminar will be of interest to those concerned with the control of noise in their work and wish to become acquainted with some of the techniques available to accomplish this end.

The fee for this seminar is $150. For further information please contact:

Susan Pierce
Department of Extension
University of Alberta
Edmonton, Alberta
Telephone: 432-5038

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1974 MEETING OF THE CANADIAN ACOUSTICAL ASSOCIATION

The Canadian Acoustical Association (formerly The Canadian Committee on Acoustics) will hold its 1974 Annual Meeting at the University of Alberta, Edmonton, Alberta, on October 10 and 11. This meeting will follow a three day seminar on Noise in Industry which is being given under the auspices of the University of Alberta Department of Extension.

The CAA invites papers on Acoustics in the fields of Biology, Engineering, Medicine, Music, Non-destructive testing, Psychology, Speech Communication and Underwater applications for a Symposium on Applied Acoustics, to be held as part of the Annual Meeting. Abstracts of 200-300 words should be sent by July 31, to the Program Chairman:

Dr. W.M. Barss
Department of Physics
University of Victoria
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NEW ALBERTA OCCUPATIONAL NOISE LEGISLATION

Alberta has recently made the following occupational noise regulations:

Alberta Regulation 118/73, effective 15 May 1973
Alberta Regulation 327/73, effective 1 January 1974

Both of the above regulations amend Alberta Regulation 30/71. Regulation 118/73 is on audiometric testing. Regulation 327/73 reduces permitted daily exposures to industrial noise.

Information on other Canadian occupational noise legislation is contained in:

Langford, W.H., 1972-73 Industrial Noise, report C/S/H/3, Legislative Research Branch, Department of Labour,

which may be obtained from:

Legislative Research Branch
Department of Labour
340 Laurier Avenue West
Ottawa, Ontario K1A 0J2

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MOTOR VEHICLE NOISE PROGRAMMES IN THE MINISTRY OF TRANSPORT

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INTRODUCTION

Under the authority of the Motor Vehicle Safety Act, the Road and Motor Vehicle Traffic Safety Branch develops and enforces the Canada Motor Vehicle Safety Standards (CMVSS). In addition to the more obviously safety-related aspects of vehicle design and performance, these standards cover gaseous pollutant emissions and noise. The Branch also conducts an applied research programme which, while primarily concerned with the mainstream of traffic safety problems, usually includes two or three vehicle noise projects.

This note outlines the current and proposed future activities of the Branch in standards development, enforcement and applied research relating to motor vehicle noise.

CURRENT STATUS OF MOTOR VEHICLE NOISE STANDARDS

Table I summarizes the current and proposed standards so far announced in the Canada Gazette. The figures in the table are the maximum permitted A-weighted sound levels measured at 50 ft. from the vehicle path in accordance with the designated SAE standard or recommended practice.

TABLE I

TYPE OF VEHICLE	CMVSS	SAE TEST	ACTUAL OR PROPOSED DATE			
			1.2.72	1.11.72	1.1.75	1.2.75
Passenger car, light truck	1106	J986a	-	86	80 →	
Heavy truck, bus	1106	J366	-	88	83 →	
Motorcycle	1106	J986a	-	86	78 →	
Snowmobile	1204	J192	82	→		78

It may be noted that the SAE Recommended Practice J986a for cars is also used for motorcycles in the absence of an acceptable alternative.

While the requirements have been summarized in terms of maximum permitted levels under SAE test procedures, an acceptable alternative for vehicles other than snowmobiles is compliance with the provisions of Section 6 of ECE Regulation No. 9. In fact, a vehicle which complies with the European regulations will in general be quieter than one which just meets the current requirements under SAE test procedures. Slight reductions in some of the permitted levels under ECE test procedures will be made to ensure that future vehicles certified on this basis are no noisier than those certified under present North American practices.

DEVELOPMENT OF MOTOR VEHICLE NOISE STANDARDS

The first round of vehicle exterior noise level standards was issued in response to demands from various sectors for the federal government to begin to control the 'maximum' noise level or 'noise potential' of the motor vehicle. The first standards were and are essentially state-of-the-art standards giving legal force to current practice in the automotive industry. The noise level reductions now proposed however represent the first stage of development designed to complement national and provincial environmental quality objectives. The division of regulatory authority between the federal and provincial governments will necessitate continuing co-ordination to ensure that standards for new vehicles and for vehicles in operation remain compatible.

The noise emitted by motorcycles and snowmobiles, while indirectly affecting the well-being of many people also has a direct effect on the health and safety of the riders of these machines. At present, the impact on the rider is controlled only implicitly and somewhat loosely through requirements based on pass-by noise measurements. Future regulations for machines with exposed riders may be expected to include both pass-by tests and some more direct control over the noise level at the operator's ear.

The impact of interior noise levels on the health and safety of truck drivers is also a matter of current concern. The U.S. Bureau of Motor Carrier Safety recently added to its regulations a requirement that the maximum noise level in the vicinity of the driver's ear should not exceed 90 dBA during a stationary run-up to maximum engine speed. The effective dates of the regulation are October 1, 1974 for new vehicles and April 1, 1975 for older vehicles in operation. The U.S. regulation is currently under review by the Branch.

ENFORCEMENT OF MOTOR VEHICLE NOISE STANDARDS

Enforcement of the Canada Motor Vehicle Safety Standards is based on the concept of self-certification. The manufacturer or importer of the vehicle certifies by affixing the National Safety Mark and statement of compliance label that the vehicle complies with all relevant provisions of the standards. This concept may be contrasted with that of type certification by a governmental agency which is general in the aviation field. To obtain the necessary documentation of compliance, the manufacturer may conduct tests and record the results himself or use the services of an independent testing laboratory. (The article by Gilles Crepeau and Daryl May in the July 1973 edition of this newsletter describes the latter procedure.)

In addition to a comprehensive programme of inspection visits to manufacturers to examine vehicles and documentation, the Branch also conducts a limited programme of compliance testing. Its primary purpose is simply to provide an independent check on the self-certification process. To date no noise testing of automobiles, trucks or buses has been considered necessary since the current standards do not pose any real problems for the manufacturer. However, a programme of compliance tests on snowmobiles was initiated in 1972-73 and is continuing. The Branch relies at present on the services of independent consultants and testing agencies for its measurements. A number of instances of marginal compliance have been and are being investigated. Active enforcement of noise regulations for other classes of vehicle is scheduled to parallel the introduction of the new limits in 1975.

The enforcement of the noise standards has not been without its problems. The principal difficulty is undoubtedly that of uncontrolled environmental variables within the prescribed limits of the relevant SAE test procedures. Further refinement of these procedures is urgently required so that the regulations can be effectively enforced.

APPLIED RESEARCH ON MOTOR VEHICLE NOISE

The first projects concerned with motor vehicle noise arose directly from the standards development work. The first of these was primarily an evaluation of existing standard test procedures and an assessment of the feasibility of specifying certain noise limits at certain future dates. Reference 1 is the report of this study.

More interesting and controversial was the study undertaken by Cowl Industries Ltd. of the feasibility of achieving substantial reductions in snowmobile noise from the 86 dBA at 50 ft. which was typical of unregulated machines. A package of standard noise control techniques was applied to two different machines and demonstrated the feasibility of a 12 - 15 dB reduction without excessive cost, weight or performance penalties. The scope of the study did not include production engineering development of the noise control package or complete internal aerodynamic redesign of the canopy. The general validity of the results has been questioned mainly on such grounds. Reference 2 is the report of this study.

Routine noise measurements on production snowmobiles were also reported as part of the more general evaluations of snowmobile safety described in References 3 and 4.

Preliminary design of three projects is at present in hand. The first concerns the feasibility of using the ear bug or a similar portable measuring device as the basis of standard noise test procedures for motorcycles and snowmobiles. The objective of the second project is the accumulation of representative noise exposure data for motorcycle and snowmobile riders. Finally, a rather broad study of the rationale for motor vehicle exterior noise standards is planned. The major objective of this study is to provide some yardstick by which the effectiveness of vehicle exterior noise standards can be gauged and improved where necessary.

CONCLUDING REMARKS

This note has outlined current and proposed future motor vehicle noise programmes in the Road and Motor Vehicle Traffic Safety Branch of the Ministry of Transport. The permission of the Director, Dr. G.D. Campbell, to publish this note is acknowledged with thanks as is the assistance of several colleagues. Nonetheless, any opinions expressed are those of the writer and do not necessarily reflect the views of the Ministry.

REFERENCES

1. Reif, Z. Brown, R. Evaluation of proposed regulations pertaining to noise created by motor vehicles. Industrial Research Institute of the University of Windsor, 1972.

2. Quiet snowmobiles: A study of the feasibility of reducing snowmobile noise. Information Canada Catalogue No. T46-173, 1973.

3. An evaluation of snowmobile safety. Information Canada, 1971.

4. A second evaluation of snowmobile safety. (To be published by the Ministry of Transport).