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**UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY**

BIBLIOGRAPHY
OF
NOISE PUBLICATIONS

1972-1982

INTRODUCTION

The EPA Noise Publications listed in this Bibliography are a composite of all materials developed and made available to the public from 1972 when EPA's Office of Noise Abatement and Control was established through 1982 when the Noise Program was phased out and the responsibility for Noise Abatement and Control was delegated back to State and local governments.

The publications are listed in reverse chronological order with 1982 publications listed first.

The EPA Document Control Number is made up as follows:

550/9	Code for Office of Noise Abatement and Control
-82	Publication Year
-400	State and Local Category

From 1976 through 1982 the EPA Document Control Number indicates the four major categories of subject areas as follows:

Health and Welfare - 100 series
Standards and Regulations - 200 series
Technical and Federal Programs - 300 series
State and Local Programs - 400 series

In some instances, a document is not available from NTIS and another source is given. Names, addresses and telephone numbers of these sources are listed on the following page.

An asterisk indicates the publication is only available on loan from U.S. Environmental Protection Agency, Headquarters Library, OANR, Washington, D.C. 20460.

ASA
Acoustical Society of America
335 East 45th Street
New York, New York 10017
(212) 661-9494

FAA
Federal Aviation Administration
Department of Transportation
800 Independence Avenue, S.W.
Washington, D.C. 20591
(202) 75-9027

FR
Federal Register
National Archives and Records Service
Washington, U.C. 20408
(202) 523-5240

GPO
Government Printing Office
Superintendent of Documents
Washington, D.C. 20402
(202) 783-3238

NANCO
National Association of Noise Control Officials
Post Office Box 2618
Fort Walton Beach, Florida 32549
(904) 243-8129

NBS
National Bureau of Standards
Department of Commerce
Washington, D.C. 20234
(202) 921-2495

NTIS
National Technical Information Service
Department of Commerce
5285 Port Royal Road
Springfield, Virginia 22161
(703) 487-4650

Office of Naval Research
Ballston Center Tower
800 North Quincy Street
Arlington, Virginia 22217
(703) 696-4609

QUIET SCHOOL PROGRAM MATERIALS

Public education materials developed by ONAC can be purchased through the Education Resources Information Center (ERIC) system as follows:

PREPARING FOR A QUIETER TOMORROW

A teaching unit for junior and senior high school students
ED-201 508

SOUNDS ALIVE: A NOISE WORKBOOK

Developed for kindergarten and elementary grades
ED-201 509

SOUNDS ALIVE: A TEACHER'S GUIDE FOR THE NOISE WORKBOOK

ED-201 510

COST:

Microfiche \$0.91 per copy plus 20¢ postage
Paper copy \$6.95 for the first copy plus \$1.84 UPS
\$3.65 each additional copy plus \$1.47 UPS

MAILING ADDRESS:

E.R.I.C. DOCUMENT REPRO SERVICES
P.O. BOX 190
ARLINGTON VIRGINIA 22210
(703) 841-1212

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SCHOOL POSTERS "NOISE AND YOUR HEARING" AND "HEAR, HERE", (coloring and quiz books), please contact:

AMERICAN SPEECH AND HEARING ASSOCIATION
Attention: Public Information
10801 ROCKVILLE PIKE
ROCKVILLE, MARYLAND 20852

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<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
MEASUREMENTS OF THE IMPULSIVENESS & ANNOYANCE OF COMPRESSION RELEASE ENGINE BRAKE NOISE	550/9-82-100	PB82-153180

The research described in this report was undertaken to evaluate the potential contribution to the overall annoyance of heavy truck noise of the impulsive character of exhaust noise created by engine compression-release braking devices. Although growing numbers of trucks are likely to be equipped with these safety devices in the future, current methods for assessing health and welfare effects of traffic noise on residential populations make no specific provisions for annoyance associated with impulsive noise sources.

FIVE YEAR PLAN FOR EFFECTS OF NOISE ON HEALTH	550/9-82-101	PB82-168972
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This plan is intended to serve as a blue print for future research by other organizations. It includes detailed plans across all the health effects categories such as nonauditory physiologic effects, behavioral effects and noise-induced hearing loss, to name just a few.

ASSESSMENT OF THE APPLICABILITY OF EXISTING HEALTH & WELFARE CRITERIA TO GENERAL AVIATION AIRCRAFT NOISE & TO GENERAL AVIATION AIRPORT COMMUNITIES (FINAL REPORT)	550/9-82-102	PB82-180134
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Existing metrics of environmental noise and its impact on people are reviewed for their suitability in assessing the impact of general aviation (GA) noise on people in airport communities.

ANALYSIS OF NOISE RELATED AUDITORY & ASSOCIATED HEALTH PROBLEMS IN THE U.S. ADULT POPULATION (1971-1975)	550/9-82-103A	PB82-218629
	550/9-82-103B	PB82-218637

Analyses presented in this report are based on the national probability subsample of 6913 adults aged 25-74 who were administered an audiometric test as well as detailed questionnaires and physical examinations dealing with hypertension and a variety of other health conditions.

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
GUIDELINES FOR NOISE IMPACT ANALYSIS	550/9-82-105	PB82-219205

The purpose of the guidelines proposed in this report is to provide with analytic procedures which can be uniformly used to express and quantify impacts from noise. The quantification methods recommended for impact assessment in these guidelines are further developments of the Fractional Impact Methodology used for assessing the health and welfare effects of a noise environment. Three principal types of noise and vibration environments are considered: general audible noise, special noises; and vibration.

NOISE EFFECTS HANDBOOK - A DESK REFERENCE TO HEALTH AND WELFARE EFFECTS OF NOISE	550/9-82-106	PB82-243981
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The desk reference contains up-to-date scientific information on the health effects of noise in a "Question and Answer" format, designed for technical or semi-technical audiences, such as State and local officials or the general public.

HUSH PROGRAM (BARRIER COMPONENT) GUIDANCE MATERIAL	550/9-82-150	PB82-253535
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Topics addressed include a brief description of the nation's growing highway noise problem, the effects of noise on health and welfare and how to reduce noise exposures in the proximity of highways. Easy methods of identifying noise-hotspots are discussed and methods to obtain relief are elaborated upon.

Noise barriers as a possible solution are stressed and guidance is given to initiate action. In addition, case histories and specific technical details are presented to assist those in charge of planning and constructing barriers.

This study was prepared for people suffering from noise, concerned citizens, technical and non-technical state, local and Federal officials involved in the process of solving severe noise problems along interstate highways, as well as planners wishing to avoid high noise exposures through planning.

SUBSTRATEGY FOR CONSTRUCTION SITE NOISE ABATEMENT	550/9-82-151	PB82-218579
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This study outlines a national strategy to address construction site-noise. After explaining the peculiar nature of construction-site noise and estimating the population exposed to high noise levels, the author presents viable methods to control such noise.

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
BENEFIT/COST ANALYSIS FOR STATE & LOCAL NOISE CONTROL PROGRAMS PHASE II - Report In-Use Controls of Motor Vehicle with Degraded Mufflers and Regulations Scenarios	550/9-82-152	PB82-213919

This study projects the noise exposure of the U.S. population from motor vehicles to the Year 2000 and indicates the reduction of such exposures from various new product regulations compared with in-use enforcement programs that concentrate on the removal of a portion of defective motor vehicle exhausts. Along with the benefits, the potential costs of various controls are projected for comparison purposes.

NATIONAL ROADWAY TRAFFIC NOISE EXPOSURE MODEL (NRTNEM)	550/9-82-201-A	PB82-259037
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The National Roadway Traffic Noise Exposure Model (NRTNEM) is comprised of a collection of on-line datasets, some containing programs and others containing data. The manual describes the job submission procedures required to run the NRTNEM as it existed on the NCC (EPA's National Computer Center) in December, 1981, under user ID EPADYN.

The NRTNEM actually consists of two models: The General Adverse Response Model ("GAR"), and the Single Event Model ("SEM"). Only one of them can be executed by a job at a time.

The NRTNEM was designed for and runs on an IBM/370 computer under MVS, with TSO (the Time Sharing Option) and WYLBUR, the latter two being conversational direct-access systems.

NATIONAL ROADWAY TRAFFIC NOISE EXPOSURE MODEL (NRTNEM) - PROGRAMMER'S MANUAL	550/9-82-201-B	PB82-259045
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The Programmer's Manual describes the NRTNEM system described above in more detail to facilitate program maintenance.

RAILYARD NOISE EXPOSURE MODEL (RYNEM) - Volume 1: Description of RYNEM Model	550/9-82-202-A	PB82-254723
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This volume presents an overview of the RYNEM model. The basic philosophy of the model is discussed and the relevant equations used in the computations are presented. This volume is written for those who need to know what the model is like. It does not go into detail of how each computation is done in the program, nor does it teach the user how to run the model. The reader is advised to peruse the Railroad Background document for other terminology used without explanation.

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
RAILROAD NOISE EXPOSURE MODEL (RYNEM) VOLUME II - RYNEM USER MANUAL	550/9-82-202-B	PB82-254731

This volume presents a cookbook approach to the execution of the RYNEM model. Its intended audience is those who will exercise the model. It assumes familiarity with Volume I, i.e., the user knows the quantities he inputs, and he knows the quantities printed out. For obvious reasons, the explanations incorporated in Volume I are not repeated. While it does not presume expertise with the EPA IBM computer system, it does assume the user can follow the instructions presented in this volume to the letter.

RAILROAD NOISE EXPOSURE MODEL (RYNEM) VOLUME III - RYNEM PROGRAMMING MANUAL	550/9-82-202-C	PB82-254749
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This volume describes the structure of the RYNEM and the model's program source code. It is not meant to teach the reader how to run the program. Execution of the model is described in Volume II. It assumes the reader has digested the contents of Volume I. The intended audience is the programmer who needs to maintain the program and make changes to the source code. A strong knowledge of standard IBM FORTRAN IV language is assumed.

RAILYARD NOISE EXPOSURE MODEL SOURCE SUBMODEL (RYNEM-S) VOLUME I - Description of RYNEM-S Model	550/9-82-203-A	PB82-259060
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This volume presents an overview of the RYNEM-S model. The basic philosophy of the model is discussed and the relevant equations used in the computations are presented. This volume is written for those who need to know what the model is like. It does not go into detail of how each computation is done in the program, nor does it teach the user how to run the model. It presupposes some familiarity with the EPA noise terminology, as is covered by the "EPA Levels" document. The reader is advised to peruse the Railroad Background document for other terminology used without explanation.

RAILYARD NOISE EXPOSURE MODEL SOURCE SUBMODEL (RYNEM-S) VOLUME II - RYNEM-S USERS MANUAL	550/9-82-203-B	PB82-259078
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This volume presents a cookbook approach to the execution of the RYNEM-S model. Its intended audience is those who will exercise the model. It assumes familiarity with Volume I, i.e., the user knows the quantities he inputs, and he knows the quantities printed out. For obvious reasons, the explanations incorporated in Volume I are repeated. While it does not presume expertise with the EPA IBM computer system, it does assume the user can follow the instructions presented in this volume.

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
RAILYARD NOISE EXPOSURE MODEL SOURCE SUBMODEL (RYNEM-S) VOLUME III - RYNEM-S PROGRAMMER MANUAL	550/9-82-203-C	PB82-259086

This volume describes the structure of the RYNEM-S and the model's program source code. It is not meant to teach the reader how to run the program. Execution of the model is described in Volume II. It assumes the reader has digested the contents of Volume I. The intended audience is the programmer who needs to maintain the program and make changes to the source code. A strong knowledge of standard IBM FORTRAN IV language is assumed.

RAILROAD CASH FLOW MODEL SOFTWARE DOCUMENTATION VOLUME I Cash Flow Model Description	550/9-82-204-A	PB82-259102
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This document describes the cash flow model used in the financial analysis conducted for the background document to railroad yard noise standards. It first details the purpose of the cash flow model. Next, a derivative to the equations used in the model is presented. Volume II lists the data inputs needed to use the model. Finally, a sample output of the model is shown with notes on how to interpret it.

RAILROAD CASH FLOW MODEL SOFTWARE DOCUMENTATION VOLUME II Cash Flow Model Users Guide	550/9-82-204-B	PB82-259110
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This volume of the railroad cash flow software documentation describes the use of the railroad cash flow model. It tells how to access the model and how to change the data. Section 2.1 provides a brief overview of the design of the cash flow model and the computing environment it is used in. Section 2.2 describes how to access the computer and run the model. Section 2.3 shows how to change the data. Section 2.4 is a sample output. Appendix A is a sample session with the cash flow model. Appendix B is a list of key commands which can be used on the WYLBUR system. Appendix C explains how to restore files which have been archived.

RAILROAD CASH FLOW MODEL SOFTWARE DOCUMENTATION VOLUME III Cash Flow Model Programmers Manual	550/9-82-204-C	PB82-259128
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This manual provides information on how to service the cash flow model. It is written for a user who has some familiarity with standard IBM FORTRAN-IV and the WYLBUR system.

The manual has four sections. The first section discusses the model design through its technical specifications, data requirements and algorithms. The second section defines the data base specifications and defines the data names. The third section is an annotated listing of the program. The fourth section describes verification and test procedures for the model.

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
AIRPORT NOISE LITIGATION-CASE LAW REVIEW (1973-1980)	550/9-82-326	PB82-162066

This report examines the judicial trends in airport noise litigation by analyzing the decisions from many of the relevant legal cases. The significant issues arising out of these various cases examine this conflict from four viewpoints: 1) who is liable for aircraft noise related damages? 2) what is the scope of airport use restrictions? 3) what are the legal theories and trends in awarding aircraft noise-related damages? 4) what is the effect of land use planning and environmental impact statements on airport control? This extensive case law review indicates that the courts are continuing to hold the airport proprietor liable for aircraft noise-related damages. The judiciary is also expanding the legal theories and granting recovery for noise-related effects on people under the nuisance theory of emotional distress as well as under the traditional inverse condemnation theory for deprivation of property.

PROCEDURES TO ESTIMATE AIRPORT RESIDENTIAL RELOCATION COSTS	550/9-82-327	PB82-239641
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The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 is reviewed. Procedures are provided for: (1) developing a well-defined set of cases for which relocation costs may be estimated; (2) determining the costs in current dollars for each expense item in each relocation case; and (3) determining the frequency of occurrence for each case as applied to specific airports. Total costs for all cases for a hypothetical airport relocation effort are provided. Supporting data and equations used are presented.

A STUDY OF SOUNDPROOFING REQUIREMENTS FOR RESIDENCES ADJACENT TO COMMERCIAL AIRPORTS	550/9-82-328	PB82-250168
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This study was conducted to estimate the costs of soundproofing dwellings within the L_{dn} 65 noise contours at major U.S. commercial airports. To determine the distribution of dwelling types in each region, and to obtain detailed information on local dwelling characteristics that affect noise reduction, field surveys were conducted at one airport in each region. The airports surveyed were selected on the basis that the local dwelling characteristics were representative of the respective region. The information obtained was used to identify the types of modifications most suitable for soundproofing dwellings in each region.

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
AIRCRAFT FLIGHT PROCEDURES PROGRAM MODIFIED COMPUTER PROGRAM MODEL-USERS MANUAL	550/9-82-329	PB82-183-757

This manual describes an aircraft flight procedures model used to construct aircraft flight paths and performance schedules for specified operational procedures. The computer model algorithms were derived from fundamental aircraft and engine performance relationships or from operational characteristics applicable to specific aircraft types.

AIRCRAFT FLIGHT PROCEDURES PROGRAM: DATA BASE DEVELOPMENT	550/9-82-330 Mag. Tape	PB82-183740 PB82-186172
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The purpose of this study was to identify and collect performance and operational data and information required to construct flight paths and performance schedules for selected commercial aircarrier aircraft types. The information can be used to determine the flight paths and performance schedules for aircraft operating in accordance with specified flight procedures.

DEMONSTRATION TRUCK PROGRAM SUMMARY: TRUCK NOISE REDUCTION	550/9-82-331-A	PB82-220328
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This report presents a comprehensive overview of an EPA-sponsored program to demonstrate the technology and costs of reducing the noise of four heavy-duty diesel trucks to 72 dBA. The program comprised engineering development and service evaluation phases. Noise control treatments were developed and installed on each truck to reduce its noise to the target level. The treatments included partial engine and transmission enclosures, exhaust silencing systems, and two-stage engine mounts for 2 of the 4 trucks. Three trucks entered fleet service where they accumulated 230,000 miles. The treatments proved to be durable and effective and did not have an adverse impact on the operation of any vehicle. Maintenance labor time increased by 1.4% because of the need to remove enclosure panels while performing some maintenance procedures.

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
DEMONSTRATION TRUCK PROGRAM: NOISE REDUCTION, TECHNOLOGY & COSTS FOR A FORD CLT 9000 HEAVY DUTY DIESEL TRUCK	550/9-82-331-B	PB82-220336

This report discusses the technology and costs required to reduce the noise of a Ford CLT 9000 heavy-duty diesel truck from 77.1 to 72.3 dBA. The noise control treatment consists primarily of a dual exhaust silencing system and a partial enclosure for the engine and transmission. Wind tunnel tests on the completed truck show that temperatures of engine coolant and oil remain within manufacturer's specified limits. The noise treatment increases the vehicle weight by 397 lb and estimated vehicle price by \$1309.

DEMONSTRATION TRUCK PROGRAM: NOISE REDUCTION, TECHNOLOGY & COSTS FOR A GENERAL MOTORS BRIGADIER HEAVEY-DUTY DIESEL TRUCK	550/9-82-331-C	PB82-220344
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This report discussess the technology and costs required to reduce the noise of a General Motors Brigadier heavy-duty diesel truck from 81.7 to 71.6 dBA. The noise control treatment consists primarily of a dual exhaust silencing system and a partial enclosure for the engine and transmission. The noise treatment increases vehicle weight by 340 lb and estimated vehicle price by \$1174. Wind tunnel tests on the completed truck show that temperatures of engine coolant and oil remain within manufacturer's specified limites.

DEMONSTRATION TRUCK PROGRAM: NOISE REDUCTION, TECHNOLOGY & COSTS FOR AN INTER-NATIONAL HARVESTER F-4370 HEAVY-DUTY DIESEL TRUCK	550/9-82-331-D	PB82-2220351
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This report discusses the technology and costs required to reduce the noise of an International Harvester F-4370 heavy-duty diesel truck from 81.1 to 72.2 dBA. The noise control treatment consists primarily of a dual exhaust silencing system and a partial enclosure for the engine and transmission. The noise treatment increases the vehicle weight by 332 lb and estimated vehicle price by \$1302. Wind tunnel tests on the completed truck show that temperatures of engine coolant and oil remain within generally acceptable limits.

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
DEMONSTRATION TRUCK PROGRAM: NOISE REDUCTION, TECHNOLOGY & COSTS FOR MACK R686 HEAVY-DUTY DIESEL TRUCK	550/9-82-331-E	PB82-220369

This report discusses the technology and costs required to reduce the noise of a Mack R686 heavy-duty diesel truck from 81.6 dBA to 73.2 dBA. The noise control treatments consist primarily of a partial enclosure for the engine and transmission, an exhaust silencing system, and two-stage engine mounts. These treatments increase the vehicle weight by 398 lb and estimated vehicle price by \$1296.

DEMONSTRATION TRUCK PROGRAM: FIELD TEST OF A QUIETED FORD CLT 9000 HEAVY- DUTY DIESEL TRUCK	550/9-82-331-F	PB82-220377
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This report describes the field test and operational performance evaluation of a quieted Ford CLT 9000 heavy-duty diesel truck. The noise of the truck had been reduced from 77.1 dBA to 72.3 dBA. The field test showed the noise control treatments to be effective and durable in over 100,000 miles of service. The treatments had no adverse impact on the vehicle's operation and appear to have had negligible effect on fuel consumption. Incremental maintenance time of 2.5 hours was attributable to the treatments' impact on normal annual vehicle maintenance.

DEMONSTRATION TRUCK PROGRAM: FIELD TEST OF A QUIETED GENERAL MOTORS BRIGAD- IER HEAVY-DUTY DIESEL TRUCK	550/9-82-331-G	PB82-220385
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This report describes the field test and operational performance evaluation of a quieted General Motors Brigadier heavy-duty diesel truck. The noise of the truck had been reduced from 81.7 dBA to 71.6 dBA. The 12-month field test showed the noise control treatments to be effective and durable, although the noise level of the truck did increase slightly. The treatments did not have an adverse impact on vehicle operation and there was no evidence of payload displacement. The vehicle's fuel economy was better than that of comparison vehicles, but this was not caused by the noise treatments. Incremental maintenance time of 2.25 hours was attributable to treatment removal and interference while performing regular maintenance during the 12-month period.

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
DEMONSTRATION TRUCK PROGRAM: FIELD TEST OF A QUIETED INTERNATIONAL HARVESTER F-4370 HEAVY-DUTY DIESEL TRUCK	550/9-82-331-H	PB82-220351

This report describes the field test and operational performance evaluation of a quieted International Harvester F-4370 heavy-duty diesel truck. The noise of the truck had been reduced from 81.1 dBA to 72.7 dBA. The truck accumulated 36,000 miles in 5 months of service. The treatments were effective and durable, and the noise level of the truck did not increase. The treatments did not have an adverse impact on vehicle operations and there was no evidence that the weight of the treatments displaced payload. The treatments did not have a measurable effect on fuel consumption. The treatments had a minimal impact on maintenance time.

EVALUATION OF A SIMULATED ROAD TEXTURE FOR THE TESTING OF TIRE/ROAD NOISE	550/9-82-332	PB82-250127
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As part of a project to study tire/road, a laboratory roadwheel facility was equipped with replica road surfaces. Moving tests on a flat steel surface were also made. This document compares results from real and simulated surfaces.

THEORETICAL MODELS FOR TIRE/ROAD NOISE EXPERIMENTAL EVALUATION & DOCUMENTATION	550/9-82-333	**
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As part of a program to develop engineering design tools suitable for the development of quiet tires, a set of theoretical noise models was prepared and evaluated. Near-field noise and vibration measurements were made on a roadwheel facility equipped with simulated road surfaces. Data were also collected on a smooth steel roadwheel, so as to separate tread pattern and pavement texture-associated components. Stationary vibration tests, with electrodynamic shaker input, were performed to obtain response of the tire. Contact patch pressure distributions, required for the noise models, were obtained with an array of miniature transducers. The evaluations lead to the refinement of the noise models. Based on these refinements, the models were finalized and computer programs prepared.

METHODS TO REDUCE DIESEL ENGINE NOISE	550/9-82-334	PB82-247925
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This report reviews the state-of-the-art for diesel engine noise reduction and presents new techniques for reducing engine block vibration and radiated noise. It presents a technique which makes it possible to identify and rank order the sources of noise within the engine.

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
DEMONSTRATION OF NOISE CONTROL FOR THE CUMMINS NTC-350 HEAVY-DUTY DIESEL ENGINE	550/9-82-335	PB82-235581

This report presents the results of an engineering study to design and demonstrate a method of reducing piston-slap noise for an inline, heavy-duty truck diesel engine for a Cummins NTC-350 engine. Modifications were designed to achieve a 5 dBA noise reduction without degrading engine performance, fuel economy or emissions.

DEMONSTRATION OF NOISE CONTROL FOR THE DDA 6V-92 TTA HEAVY-DUTY TRUCK DIESEL ENGINE	550/9-82-336	PB82-234295
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This report presents the results of an engineering study to design and demonstrate methods of reducing diesel engine block vibration and radiated noise. The modifications were designed for the Detroit Diesel Allison 6V-92 TTA heavy-duty diesel truck engine so that the noise reduction was achieved without degrading engine performance, fuel economy or emissions.

SECOND NATIONAL CONFERENCE ON GENERAL AVIATION AIRPORT NOISE AND LAND USE PLANNING SUMMARY	550/9-82-337	PB82-218520
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This report constitutes the proceedings of the three day Second National Conference on General Aviation Airport Noise and Land Use Planning. The attendees at this Conference showed a greater awareness of the general aviation airport noise situation than at the first Conference. The airport operators and the planners have become more knowledgeable in this area, perhaps due, in part, to ANCLUC studies at several general aviation airports.

NOISE EXPOSURE AROUND JOINT-USE AIRPORTS	550/9-82-338	PB82-254699
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This report describes a study of present and future exposures of people to noise from airports used by both civilians and military aircraft and predicts how exposure around these airports will be affected by increasingly stringent aircraft noise regulations in the absence of similar regulation of military aircraft.

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
COMMUNITY NOISE AROUND GENERAL AVIATION AIRPORTS FROM THE YEAR 1975 to 2000	550/9-82-339	PB82-239666

This study forecasts general aviation airport noise from 1975 to the year 2000. It focuses upon noise due to propeller-driven and business jet airplanes that operate at exclusively general aviation airports. The results of the study, expressed in terms of geographical area and population within day-night average sound levels of 55 decibels and higher, are estimated at five-year intervals covering this study period.

ACTIONS AFFECTING LAND-USE COMPATIBILITY AT U.S. AIRPORTS	550/9-82-340	PB82-240375
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This report documents the actions taken by airports as a result of recommendations made by Airport Noise Control and Land Use Compatibility (ANCLUC) studies funded by the Airport and Airways Development Act of 1970 (ADAP) and as a result of FY 1980 Federal grants authorized by the Aviation Safety and Noise Abatement Act of 1980.

USER'S MANUAL FOR THE ALAMO DEMOGRAPHIC REPORT GENERATOR PROGRAM (DEMCON)	550/9-82-341	PB82-240367
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This report presents a discussion of the user requirements and procedures for executing the Demographic Report Generator Program. DEMCON, a computer program written in FORTRAN IV programming language, uses as input the Aircraft Noise Levels and Annoyance Model (ALAMO) demographic profile reports which are generated for each octant of specified day-night sound level (L_{dn}) contour band and computes the same variables for the all-octant case. The program also projects selected demographic variables to future years based on historical growth rates for population, households, and per capita income.

USER'S MANUAL FOR AUTOMATED CALCULATION OF FLEET NOISE LEVEL AND AIRPORT NOISE INDEX	550/9-82-342	PB82-240342
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This manual provides instructions to the users of a series of programs that calculate fleet noise level (FNL) and airport noise index (ANI). The concept of FNL provides a method for evaluating the noise status of fleets of aircraft. Using FNL, comparisons can be developed between fleets for all airports or subsets of airports. It is an average of acoustical energies. The ANI is a measure that is sensitive to total acoustical energy.

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
AIRPORT COMMUNITY SOUNDPROOFING AND RELOCATION STUDY	550/9-82-343	P882-259144

This study provides the methodology used to integrate parameters affecting noise exposure, considers soundproofing and relocation program issues, and presents procedures used to quantify airport residential soundproofing and relocation costs.

AIRPORT NOISE - LAND USE COMPATIBILITY BY YEAR 2000	550/9-82-344	P882-259151
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This report reviews the progress which has been made in airport noise control and presents a forecast of changes in aviation noise exposure that will occur during the balance of this century; Results are given of an analysis which examines the benefits of noise abatement flight operations, flight procedures, and of restrictions on population encroachment, on residential noise exposure. Cost of residential soundproofing and relocation, based upon in-depth studies, are presented for four air carrier airports which represent four airport categories. While the main focus of the report is on noise exposure above L_{dn} 65 at air carrier airports, noise exposure around general aviation and joint use civil/military airports is also discussed.

A UNIFIED SET OF MODELS FOR TIRE/ROAD NOISE GENERATION	550/9-82-345	P882-250150
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A set of theoretical models has been prepared which describes the noise generated by tire/road interaction. The mechanisms considered are air pumping and carcass vibration. The models begin with a set of thin shell equations describing the motion of the belt of a radial ply tire, as derived by Bohm ("Mechanisms of the Belted Tire," Ingenieur-Archiv, XXXV, 1966).

A METHOD FOR ASSESSING AUTOMOBILE NOISE	550/9-82-405	P882-196130
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This study presents a method that can be used to examine and quantify each factor contributing to motor vehicle noise produced by automobile accelerating on city/suburban streets. It is based on data collected in six different jurisdictions subject to a range of noise control programs and was developed to assist State/local jurisdictions to formulate or refine motor vehicle noise control programs.

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
A METHOD FOR ASSESSING THE EFFECTIVENESS OF PROPERTY LINE NOISE CONTROL PROGRAMS	550/9-82-406	PB82-200288

This study describes that basic components found in four active property line noise control programs and suggests a method for assessing program effectiveness. It is for use by local jurisdictions interested in developing property line noise control or assessing current program completeness.

AN EVALUATION OF STRATEGIES TO CONTROL NOISE FROM REFUSE COLLECTION VEHICLES	550/9-82-407	PB82-239633
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This report investigates four potential noise control approaches to the control of noise from refuse vehicles. These included: (1) The potential impact of a legislative alternative requiring stationary compactors for all new hi-rise developments; (2) The effect of a collection curfew; (3) The incorporation of noise into an annual inspection program and (4) The impact of taking no local action and allowing federal regulations to serve as the only control.

AN EVALUATION OF STRATEGIES TO CONTROL NOISE FROM MINIBIKES	550/9-82-408	PB82-193277
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This report covers a series of potential control strategies for minibike noise which can be used in a metropolitan jurisdiction. Other jurisdictions would gain insight into their minibike noise problems from reading this report. These potential strategies include: a curfew alternative; a specific use area; prohibited use on public land except recreational areas and on private lands with permission of the owner; and an exploration of the possibility of a registration/licensing fee. The study was made in Montgomery County, Maryland, which is a large and wealthy suburban area that is part of the Washington, D.C. metropolitan area. Exploration of the curfew alternative indicates that it is not a particularly effective strategy in controlling minibike noise.

STATE & LOCAL ENVIRONMENTAL NOISE CONTROL 1980 SURVEY REPORT	550/9-82-409	PB82-192782
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This report, conducted by the National League of Cities, covers public attitude on noise, legislation and enforcement, State and local resources. It provides excellent background to municipalities interested in the State-of-the-art in noise abatement control. This report is an assessment of the principal sources of State and local noise problems across the country, and shows what municipalities are doing to abate and control noise in their own communities.

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
QUIET COMMUNITIES PROGRAM EXPERIMENT/ DEMONSTRATION	550/9-82-411	PB82-220716

A partial assessment of the results of a Federally sponsored program conducted in three cities to demonstrate the best available techniques for developing local noise control. Includes an overall summary and focuses on the correlation between attitudinal and acoustical surveys, between actual noise levels and public perception.

A METHOD FOR ASSESSING BENEFITS OF A MODEL NOISE CONTROL BUILDING CODE	550/9-82-412	*
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This report will provide communities with the procedure for determining the benefits of a building noise code to citizens within that community. The report should be used in conjunction with the Model Building Code and the manual for assessing costs for a building code.

TRAINING MANUAL FOR MECHANICAL EQUIPMENT NOISE CONTROL PERMIT SCHEME FOR MODEL BUILDING CODE	550/9-82-413	PB82-259136
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This manual specifically deals with the acoustical impact of building mechanical equipment systems on the exterior environment surrounding a building site. It has been prepared as a training and implementation guide for building officials and engineers whose knowledge and training in acoustics may be limited.

EVALUATION OF VARIOUS MOTORCYCLE NOISE STATIONARY TEST PROCEDURES	550/9-82-428	*
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The purpose of this report is to provide technical information to State and local noise control officials on the correlation between stationary motorcycle noise tests and the federal F76 passby noise test.

GUIDANCE MANUAL FOR POLICE IN STATE AND LOCAL NOISE ENFORCEMENT PROCEDURES	550/9-82-429	PB82-254707
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The purpose of this manual is to provide law enforcement personnel with the necessary technical skills and procedures to enforce State and local motor vehicle noise laws. The manual has been written for use by the police officer charged with the enforcement responsibilities, as well as his supervisor.

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
FEDERAL NOISE RESEARCH IN HEALTH EFFECTS (1978-1980)	550/9-81-100	PB82-150772
<p>This review of U.S. sponsored research on the effects of noise on health is an update of a previous survey which compares present trends in research in different noise effects research categories and by federal agency. The following categories of research are covered: Nonauditory Physiologic Responses; Noise Effects on Sleep; Individual and Community Response; Behavioral, Social, and Performance Effects; Communication Interference; Noise Environment Determination and Exposure Characterization; and Human Response to Noise Concomitant with Vibration.</p>		
NOISE IN AMERICA - EXTENT OF THE NOISE PROBLEM	550/9-81-101	PB82-219189
<p>The number of Americans exposed to various levels of occupational and environmental noise is estimated. Estimates are made for 11 categories of noise producers (e.g., traffic, aircraft, construction) using the L_{dn} or $L_{eq}(24)$ metrics.</p>		
FOREIGN NOISE RESEARCH IN HEALTH EFFECTS (1978-81)	550/9-81-102	PB82-148628
<p>Research from 19 countries, including 168 research projects, is by specific categories of health effects. For each project, an abstract, the name and address of the principle investigator, funding and sponsor data (if available), and citations of available publications are given.</p>		
EPIDEMIOLOGY FEASIBILITY STUDY: EFFECTS OF NOISE ON THE CARDIOVASCULAR SYSTEM	550/9-81-103-A 550/9-81-103-B 550/9-81-103-C	PB82-147752 PB82-147760 PB82-147778
<p>This 3 volume report contains a review of all world literature to date and a critical analysis of existing foreign and domestic epidemiological research on the nonauditory physiological effects of noise. In addition, the scientific literature on hypertension, cardiovascular disease, and general stress are analyzed for its applicability to noise effects epidemiology. Information and recommendations pertinent to a number of substantive and methodological issues related to the design and conduct of future noise effects epidemiology is also provided.</p>		

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
DETAILED RESEARCH PLAN CARDIOVASCULAR EFFECTS OF NOISE	550/9-81-104	PB82-163379

As part of its research effort in the area of noise effects, EPA developed the plan contained in this report to organize research dealing with cardiovascular effects which has been identified by numerous experts as the number one noise effects research priority. The report delineates the current state of scientific knowledge and several planning alternatives for research to aimed at reaching protective human criteria.

HANDBOOK FOR MEASURING THE INTERSTATE RAIL CARRIER NOISE EMISSIONS STANDARDS	550/9-81-200	PB82-145335
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This handbook describes procedures for measuring compliance with EPA's Noise Emission Standards, which set limits on the noise of locomotives, rail cars, active retarders, car-coupling impacts, and locomotive load cell test standards.

CONSUMER PRODUCT NOISE IMPACT MODEL: USERS MANUAL AND PROGRAM GUIDE (Computer Tape)	550/9-81-250	PB82-254756
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This report documents the development of a conceptual model, and a computer program for its implementation, for assessing the aggregate impact of noise from household and consumer products on the health and welfare of the national population. The computer program requires input data on population, time utilization, dwelling type, noise isolation in dwellings, product noise emission, and product utilization. From the input data, the "weighted population," corresponding to each of a number of different noise descriptors, is computed. The report describes the assumptions involved in the model, reviews available input data, and documents the computer program.

AD HOC INTERNATIONAL MEETING OF REGULATORY OFFICIALS ON ALIGNMENT OF NOISE TEST PROCEDURES, DECEMBER 9-12, 1980, NATIONAL REGULATORY SITUATIONS AND REGULATIONS CONCERNING NOISE SOURCE EMISSIONS	550/9-81-251-A	PB81-223265
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This document is a compendium of noise regulations in the countries participating in the first Ad Hoc International Meeting of Regulatory Officials on Alignment of Noise Test Procedures. The regulations described in the compendium include those existing, those under development, and those anticipated within five years, and fall into six product categories: Construction Equipment, Domestic Appliances, Miscellaneous, Railroads, Motor Vehicles, and Aircraft.

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
PROCEEDINGS OF THE AD HOC INTERNATIONAL MEETING OF REGULATORY OFFICIALS ON ALIGNMENT OF NOISE TEST PROCEDURES-DECEMBER 9-12, 1980	550/9-81-251-B	PB82-147224

This document presents the Proceedings of the First Ad Hoc International Meeting of Regulatory Officials on Alignment of Noise Test Procedures. The Ad Hoc Meeting was held in Washington, D.C. on December 9-12, 1980. The Proceedings describes the history and rationale of the meeting, presents the Meeting conclusions, details the Meeting agenda, lists the participants, and summarizes the presentations made at the Meeting and the ensuing discussions.

ANALYSIS AND ABATEMENT OF HIGHWAY CONSTRUCTION NOISE	550/9-81-314-A	PB82-148115
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This study investigated the noise associated with highway construction activities. It involved the identification and examination of associated noise characteristics, availability and demonstration of abatement measures, as well as the development of a computer based model for use as a tool to predict the noise impact of construction activities and to plan mitigation measures. The model was developed for use on the FHWA computer (IBM 360). A total of seven reports were prepared in this study and have been released for public distribution.

A MODEL FOR THE PREDICTION OF HIGHWAY CONSTRUCTION NOISE	550/9-81-314-B	PB82-148123
IBM 360/SYSTEM BATCH VERSION OF HIGHWAY CONSTRUCTION	550/9-81-341-C	PB82-148131
APPENDIX A HIGHWAY CONSTRUCTION NOISE FIELD MEASUREMENTS SITE ONE I-201 (CALIFORNIA)	550/9-81-314-D	PB82-148149
APPENDIX B HIGHWAY CONSTRUCTION NOISE FIELD MEASUREMENTS SITE TWO I-205 (STATE OF OREGON)	550/9-81-314-E	PB82-148156
APPENDIX C HIGHWAY CONSTRUCTION NOISE FIELD MEASUREMENTS SITE THREE I-95/395 (MARYLAND)	550/9-81-314-F	PB82-148164
APPENDIX D HIGHWAY CONSTRUCTION NOISE FIELD SITE FOUR I-75 (FLORIDA)	550/9-81-314-G	PB82-148172

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
INDUSTRIAL MACHINERY NOISE IMPACT MODELING VOL. I	550/9-81-315-A	PB82-148099
<p>This study describes the development of a machinery noise computer model which may be used to assess the effect of occupational noise on the health and welfare of industrial workers. The purpose of the model is to provide EPA with the methodology to evaluate the personnel noise problem, to identify the equipment types responsible for the exposure and to assess the potential benefits of a given noise control action. Due to its flexibility in design and application, the model and supportive computer program can be used by other federal agencies, state governments, labor and industry as an aid in the development of noise abatement programs.</p>		
VOL. II Appendices	550/9-81-315-B	PB82-148107
SHEET METAL SHOP NOISE CONTROL STUDY AT THE CHARLESTON NAVAL SHIPYARD	550/9-81-316	PB82-147307

This report contains an evaluation of noise conditions in the sheet metal shop at the Charleston Naval Shipyard in Charleston, South Carolina (CNSY Shop 17). The study was performed during 1978. The evaluation is based on noise exposure data for fulltime workers in Shop 17 and an analysis of noise emissions of the individual machine types used in the shop. Noise emission data are presented for the following equipment types: band saws, friction saws, pneumatic grinders, electric routers, square shears, nibblers, belt sanders, punch presses (manual and numerically controlled), press brakes, cutoff saws, spot welders, drill presses, pneumatic drills and electric drills.

FOREIGN NOISE RESEARCH IN SURFACE TRANSPORTATION	550/9-81-317	PB82-100306
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This report provides a broad overview of the international research effort in surface transportation noise abatement and control that was completed or underway in the 1978-1981 time period. 294 projects were reported by 21 countries and 2 community groups (CEC & EEC). Reports included:

- o Identification of Program Sponsor
- o Type of Research
- o Funding Levels
- o Program Summary
- o References

Activities covered ranged from basic research, through technology development and, systems demonstration programs including noise prediction and measurement methodologies.

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
FOREIGN RESEARCH IN TIRE NOISE	550/9-81-318	PB81-247066

The U.S. Environmental Protection Agency (U.S. EPA) has identified noise from surface vehicles as a significant noise problem in the United States and noise from tires as a principal contributor to this problem. Moreover, as noise from the other parts of the vehicle is gradually reduced through the application of better technology, noise from tires will become a more significant contributor, when the vehicle is operated at high speeds. This report provides an overview of recently completed, current, or planned foreign tire noise research, development, and demonstration projects, and identifies tire industry developments and developing changes in tire technology which may have a bearing on noise.

EFFECT OF COOLING SYSTEM DESIGN ON TRUCK NOISE	550/9-81-319	PB82-101148
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The engine cooling fan is a major component noise source in highway trucks. The purpose of this report is to review the current state of the art for quieting of truck cooling system fans. Recent improvements in analytical capabilities and increased understanding of fan noise are reviewed.

Considerable emphasis is devoted to the investigation of the cooling system airflow requirement and an evaluation of alternative cooling system airflow configurations which would yield significant cooling system sound level reductions. Recommendations for actions which would foster the design, development, and installation of quieter fans are made.

EFFECT OF ACOUSTICAL ENGINE ENCLOSURES ON TRUCK COOLING SYSTEM PERFORMANCE	550/9-81-320	PB82-101155
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Quieting internal combustion engine noise from highway vehicles is currently accomplished by means of acoustical engine enclosures. These enclosures may also have the effect of restricting the cooling airflow traveling through the engine compartment.

The purpose of this report is to describe and discuss engine compartment airflow, establish the framework of a semi-analytical model describing this airflow, review the effect of acoustical engine enclosures on this airflow, and identify and specify additional data required for such a model to be measured. In addition, instrumentation which can be used to monitor truck cooling system performance during in-use operation is specified.

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
AVAILABILITY OF WORKPLACE NOISE CONTROL TECHNOLOGY SELECTED MACHINES	550/9-81-321	PB82-219163

This report reviews the noise control technology available to equipment manufacturers and users of the following machines: automatic screw machines, semi-automatic stamping presses, planes, wood saws, metal saws, crawler tractors, molding machines, spinning frames, and twisters. The study also looks at the reasons for the unavailability of certain control technology. The availability of new quiet machines on the market place is also reviewed.

EVALUATION AND ABATEMENT OF NOISE FROM AIR-CRAFT AUXILIARY POWER UNITS AND AIRPORT GROUND POWER UNITS	550/9-81-322	PB82-168360
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APUs and GPUs provide essential service to aircraft during ground operations. Sound levels near these devices range from 80 to 87 dBA at 30 m for APUs, 83 to 103 dBA at 10 m for turbine-engined GPUs, and 71 to 80 dBA at 10 m for piston-engined GPUs. Procedures are provided for: (1) estimating community sound levels due to APUs and GPUs, (2) estimating their exposures in terms of day-night sound levels, and (3) assessing the desirability of noise abatement by comparison to recommended levels for acceptability.

NOISE CONTROL TECHNOLOGY EVALUATION FOR SUPER-SONIC TRANSPORT CATEGORY AIRCRAFT	550/9-81-323	PB82-169616
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The report contains five sections. Section 2 develops a basic perspective on the noise of subsonic and supersonic aircraft and the general relationships between their airframe and engine performance characteristics, noise certification standard, and noise impact. Section 3 summarizes the status of individual elements of noise control technology including engine, aerodynamics, and operational procedures. Section 4 reviews some of the integrated airframe-engine noise integration studies, and Section 5 attempts to summarize where noise and the SST stand with respect to technology. This report is based on information developed and made available prior to Fall 1978.

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
AIRCRAFT NOISE - TAKEOFF FLIGHT PROCEDURES AND FUTURE GOALS	550/9-81-324	PB82-170457

The study was designed to develop and analyze an aircraft takeoff noise data base consisting of areas and populations, computed as a function of noise level, aircraft type, weight and takeoff flight procedure. Six aircraft, each at typical and maximum weight, were chosen to represent the range of civil transport aircraft and engine types. The data base developed in this report enable an approximate direct translation of results between various operational procedures and the certification test procedures.

ESTIMATE OF THE IMPACT OF NOISE FROM JET AIRCRAFT AIR CARRIER OPERATIONS	550/9-81-325	PB82-161324
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This report contains an update and revision of the estimated noise impact of airport jet air carrier operations in the years 1975 and 2000. These estimates are based on the current takeoff flight procedures, the 1979 FAA fleet forecast, and current definitions of new technology aircraft. They do not assume additional regulatory actions, either in aircraft noise certification or in airport operations, nor do they assume additional noise control efforts on the part of individual airports.

DEVELOPMENT OF A MECHANICAL EQUIPMENT NOISE- CONTROL PERMIT SCHEME FOR MODEL BUILDING CODE	550/9-81-400	PB82-132523
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This report deals with the development of noise-control approaches applicable to a mechanical equipment permit scheme for commercial, business, institutional, and residential high-rise buildings.

The report identifies and categorizes mechanical equipment as noise sources. The equipment is classified and rank-ordered on the basis of potential noise impact. A series of worksheets and guidelines are presented for use in performing the calculations necessary to evaluate a given mechanical design for exterior noise impact.

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
MODEL NOISE CONTROL PROVISIONS FOR BUILDING CODES AND AN IMPLEMENTATION MANUAL	550/9-81-401	PB82-134081

A model municipal noise control code for buildings has been developed. Also included is an implementation manual for this code. The provisions of the code were developed with three objectives in mind. First, they attempt to minimize the adverse health and welfare effects of intruding noise without requiring the construction of economically unreasonable buildings. Proposed standards for the outdoor reduction of noise levels are achievable with existing materials and construction techniques. Secondly, enforcement for the review of plans and for the acceptance of completed buildings are described. Thirdly, this material should help jurisdictions develop a process of administration and enforcement that is compatible with existing building code procedures.

CODE OF CURRENT PRACTICES FOR ENFORCEMENT OF MODEL NOISE CONTROL ORDINANCE	550/9-81-402	PB82-132606
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This report provides communities interested in adopting a noise control ordinance with measurement procedures for effective enforcement. The first segment discusses the theory of sound, terminology, and computation methods. Vibration measurement and criteria are also presented.

The second segment of this report presents the current measurement procedures. Noise and vibration measurement procedures are presented for stationary noise sources. These include statistical sampling and steady sound techniques, both weighted and octave band. Both roadway (passby) and stationary sound level measurement methods are provided for automobiles, trucks, and motorcycles. Sound measurement procedures are also included for buses, construction equipment, model vehicles, recreation vehicles, and refuse collection vehicles.

AN EVALUATION OF STRATEGIES TO CONTROL NOISE FROM GRAIN DRYERS	550/9-81-403	PB82-241852
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This report deals with the investigation of each of the noise control alternatives for grain dryers in the State of Maryland. The primary objective of this study was to furnish and verify information with recommendations for future approaches to grain dryers noise control which would be of assistance to other jurisdictions, faced with grain dryers noise problems, as well as, references to other studies which may be helpful.

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
AN EVALUATION OF STRATEGIES TO CONTROL NOISE FROM AIR CONDITIONING AND REFRIGERATION CONDENSING UNITS	550/9-81-404	PB82-165903

This report details the strategies evaluated and assesses the experience encountered in the investigation of noise from air conditioners and refrigeration condensing units in the State of Maryland. Each is designed to provide guidance for the State and local noise agencies faced with similar noise problems. Hence, emphasis is placed on the practical aspects of attempting to implement innovative approaches.

NATIONAL AMBIENT NOISE SURVEY	550/9-82-410	PB82-193681
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The objectives, methodology, and results of a national survey of outdoor noise environments in urban residential areas are discussed. The objectives were to determine overall noise levels, source contributions, and patterns of spatial and temporal variation in these areas, along with the effect of three locational factors on these parameters. The survey employed a randomized site selection procedure; a stratified sampling strategy, and a multifaceted measurement protocol to meet these objectives. Results of the survey include a simple model which predicts L_{dn} in these areas; projections of nationwide noise impact, average source contributions and temporal noise level histories and average variations in noise level at different locations around residential units.

COMMUNITY NOISE ASSESSMENT MANUAL SOCIAL SURVEY	550/9-81-414	PB82-244360
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This workbook provides specific instructions for the design and administration of a social survey of community attitudes toward noise. Implementation of a social survey is an exercise in management, but in addition to following the rules and guidelines in the manual, city officials must exercise judgment and "common sense."

COMMUNITY NOISE ASSESSMENT MANUAL: SOCIAL SURVEY USERS MANUAL	550/9-81-415	PB82-243024
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This document provides specific instructions for the design and administration of a social survey of community attitudes toward noise. The social survey should be used with the Acoustical Survey and the Community Noise Strategy Guidelines.

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
COMMUNITY NOISE ASSESSMENT MANUAL: TELEPHONE ATTITUDINAL SURVEY GUIDELINES	550/9-81-416	PB81-244295

This report provides guidelines for the implementation of a telephone survey for determining community attitudes towards noise. The manual provides the survey format and the information required to logistically implement the program.

COMMUNITY NOISE ASSESSMENT MANUAL: ACOUSTIC SURVEY OF A COMMUNITY	550/9-81-417	PB82-106196
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This report was prepared by EPA, Office of Noise Abatement and Control, in support of its function to provide technical assistance to communities. The Manual provides a comprehensive and computerized system for assessing the noise problems of a community and then planning a noise control strategy for its abatement.

This Manual presents the technical instructions and guidelines needed by municipal authorities to carry out an initial noise survey. This survey will determine average noise levels and major noise sources for the community as a whole. It can be used in planning noise reduction measures to benefit the entire community or a substantial portion thereof.

COMMUNITY NOISE ASSESSMENT MANUAL: ACOUSTICAL SURVEY/COMPUTERIZED DATA REDUCTION PROCEDURES	550/9-81-418	*
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This report was prepared by EPA, Office of Noise Abatement and Control, in support of its function to provide technical assistance to communities. It is one of nine which comprises the Community Noise Assessment Manual. The Manual provides a comprehensive and computerized system for assessing the noise problems of a community and then planning a noise control strategy for its abatement. This report provides the computerized procedures for running an acoustical survey for a community as described in the report: "Acoustical Survey for a Community."

COMMUNITY NOISE ASSESSMENT MANUAL: STRATEGY GUIDELINES FOR DEVELOPING A COMMUNITY NOISE CONTROL PROGRAM	550/9-81-419	PB82-244352
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The purpose of this document is to assist community officials in planning noise control programs. This manual describes how to use acoustical and social survey data to choose an optimum noise control program for a chosen period and budget.

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
COMMUNITY NOISE ASSESSMENT MANUAL: COMPUTER PROGRAMS FOR THE STRATEGY GUIDELINES FOR DEVELOPING A COMMUNITY NOISE CONTROL PROGRAM	550/9-81-420	PB81-243024

This report was prepared by EPA, Office of Noise Abatement and Control, in support of its function to provide technical assistance to communities. It is one of nine which comprises the Community Noise Assessment Manual. The Manual provides a comprehensive and computerized system for assessing the noise problems of a community and then planning a noise control strategy for its abatement.

SIMPLIFIED NOISE CONTROL STRATEGY GUIDE	550/9-81-421	PB81-243016
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This report was prepared by EPA, Office of Noise Abatement and Control, in support of its function to provide technical assistance to communities. It is one of nine which comprises the Community Noise Assessment Manual. The Manual provides a comprehensive and computerized system for assessing the noise problems of a community and then planning a noise control strategy for its abatement. It provides a simplified and manual system for planning the noise control strategy for abating a community's noise problems. It assists communities in determining, in an objective manner, the efficient allocation of funds for reducing the adverse effects of noise in their community.

MANUAL FOR DEVELOPMENT OF FORMAT FOR THE PRESENTATION OF COMMUNITY NOISE ASSESSMENT DATA	550/9-81-422	PB81-243008
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The purpose of this report is to provide various presentation techniques that will ensure effective communication of noise data to elected officials, administrators, health officials and other local personnel. The principal users of this manual are the city officials entrusted with responsibility for noise control administration.

GUIDELINES FOR CONSIDERING NOISE IN LAND USE PLANNING & CONTROL	550/9-81-423	PB82-214124
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The purpose of this document is to put the various Federal Agency Land Use policies and guidance packages into perspective. Also this document does not replace the individual Federal agency material it can facilitate the consideration of noise in all land use planning and interagency/intergovernmental coordination process.

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
REPORT TO THE EPA ON THE WORKSHOP FOR THE DEVELOPMENT PROCEDURES FOR U.S. PARTICIPATION IN INTERNATIONAL STANDARDIZATION IN ACOUSTICS HELD OCT. 22-25, 1980 AT AIRLIE HOUSE, VA. ACOUSTICAL SOCIETY OF AMERICA REPORT	550/9-81-(S&R)	(Available from Acoustical Society of America)

EFFECTS OF NOISE ON WILDLIFE AND OTHER ANIMALS REVIEW OF RESEARCH SINCE 1971	550/9-80-100	PB82-139973
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This report represents a survey of the most significant studies since EPA issued its first report concerning noise effects on wildlife in 1971. The report has been divided into three main sections: laboratory animals, domestic animals, and wildlife. Reports on each species or taxonomic group are presented in four major categories of noise effects: auditory physiological, masking, nonauditory physiological, and behavioral.

NOISE, GENERAL STRESS RESPONSE, AND CARDIOVASCULAR DISEASE PROCESSES REVIEW AND REASSESSMENT OF HYPOTHESIZED RELATIONSHIPS	550/9-80-101	PB82-152141
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This report contains a limited survey on the existing scientific literature pertaining to the cardiovascular effects of high noise exposure, and places that literature in perspective based on the available knowledge of general cardiovascular effects of stressful stimuli. The authors also discuss conceptual obstacles to progress in cardiovascular disease research, key technical or measurement system obstacles for research, and findings related to noise and suggestions for further research.

ANALYSIS OF HUMAN ACTIVITY PROFILES USERS MANUAL	550/9-80-102	PB81-242539
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This report describes a user oriented computer program that allows investigation and analysis of daily activity profiles from two large existing data bases. The user can examine the relationships between people's primary activities, secondary activities, location and activity duration.

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
REGULATORY ANALYSIS FOR THE FINAL NOISE EMISSION REGULATION FOR BUSES	550/9-80-212	PB82-195058

This document presents the technical data and analysis used by EPA in developing the Proposed Noise Emission Regulation for Buses. The information presented includes a detailed discussion of: buses and the bus industry; baseline noise levels for current buses; the noise control technology available; the adverse health and welfare impacts of bus noise and the potential benefits of Federal regulation; the expected costs and potential economic effects of regulation; the measurement methodology; the anticipated enforcement procedures; and existing State, local and foreign noise regulations applicable to buses. A Federal noise regulation has not been issued for buses; this document is available for information purposes only.

DOCKET ANALYSIS FOR THE FINAL NOISE EMISSION REGULATION FOR BUSES	550/9-80-213	PB82-194564
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This document presents all comments received from the public regarding the Proposed Bus Noise Emission Regulation and the Federal government's responses to each comment. The comments include those received during the 90-day public comment period and testimony received at two public hearings. The comments and Agency responses address: health and welfare benefits of the regulation; bus interior noise; school buses; possible economic effects of the regulation; noise control technology; enforcement of the regulation; test procedures; Acoustical Assurance Period and Sound Level Degradation Factor; Transbus; transit malls; and general comments. A Federal noise regulation has not been issued for buses; this document is available for information purposes only.

ENVIRONMENTAL IMPACT STATEMENT FOR THE FINAL NOISE EMISSION REGULATION FOR BUSES	550/9-80-214	PB82-194929
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This document presents an assessment of the expected benefits and impacts of the Proposed Noise Emission Regulation for Buses. The information presented includes a description of the bus noise problem, the statutory basis for the action, a summary of the proposed regulation, State and local programs complementary to Federal noise emission standards for buses, the alternatives considered, the expected benefits of Federal regulation, the potential economic effects of regulation, public comments on the draft environmental impact statement, and conclusions. A Federal noise regulation has not been issued for buses; this document is available for information purposes only.

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
OFFICIAL DOCKET FOR PROPOSED REVISION TO RAIL CARRIER NOISE EMISSION REGULATION	550/9-80-215	PB82-137928

This document contains copies of the public comments that were received after the first official public comment period, which closed on July 12, 1979 for the April 17, 1979 Proposed Property Line and Source Specific Standards regulation amendment. Also contained are those public comments received during a reopened comment period (January 4, 1980 until April 4, 1980) which followed the publication of certain final rail yard noise source standards on this two-part rulemaking action.

REGULATORY ANALYSIS FOR THE NOISE EMISSION REGULATIONS FOR MOTORCYCLES AND MOTORCYCLE EXHAUST SYSTEMS	550/9-80-217	PB81-180457
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This document presents the technical data and analyses used by EPA in developing the noise emission regulations for motorcycles and motorcycle exhaust systems. The information presented includes a detailed discussion of: the motorcycle and motorcycle exhaust systems industry; baseline noise levels for current motorcycles; the noise control technology available; the adverse health and welfare impacts of motorcycle noise and the potential benefits of regulation; the expected costs and potential economic effects of regulation; and the noise measurement methodology.

REGULATORY ANALYSIS APPENDICES FOR THE NOISE EMISSION REGULATIONS FOR MOTORCYCLE AND MOTORCYCLES EXHAUST SYSTEMS	550/9-80-218	PB81-180465
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This document includes detailed information that supplements Sections 1 through 8 of the Regulatory Analysis. In addition, it includes an analysis of State, local, and foreign motorcycle noise regulations and a summary of the motorcycle national emphasis plan.

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
DOCKET ANALYSIS FOR THE NOISE EMISSION REGULATIONS FOR MOTORCYCLE AND MOTORCYCLE EXHAUST SYSTEMS	550/9-80-220	PB81-180473

This document presents all comments received from the public regarding the proposed noise emission regulations for motorcycles and motorcycle exhaust systems and the Federal government's responses to each comment. The comments include written submissions received during the 90-day public comment period, and testimony received at the three public hearings. The comments and Agency responses address: health and welfare benefits of the regulation; economic effects of the regulation; noise control technology; enforcement of the regulation; test procedures; Acoustical Assurance Period and Sound Level Degradation Factor; labeling; mopeds; and general comments.

ENVIRONMENTAL IMPACT STATEMENT FOR THE NOISE EMISSION REGULATIONS FOR MOTORCYCLES AND MOTORCYCLE EXHAUST SYSTEMS	550/9-80-221	PB81-180481
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This document presents an assessment of the expected benefits and impacts of the final noise emission regulations for motorcycles and motorcycle exhaust systems. The information presented includes a description of the motorcycle and motorcycle exhaust noise problem, the statutory basis for action, a summary of the regulation, State and local programs complementary to Federal noise emission standards for motorcycles and motorcycle exhaust systems, the rationale for regulation, the expected benefits of the regulation, the potential economic effects of the regulation, public comments, the draft environmental impact statement, and conclusions.

A COMPARISON OF SOUND POWER LEVELS FOR PORTABLE AIR COMPRESSORS BASED UPON TEST METHODOLOGIES ADOPTED BY U.S. EPA AND THE CEC	550/9-80-222	PB81-182438
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The test results presented in this report are the end product of bilateral discussions and technical cooperation between the Commission of the European Communities and U.S. Environmental Protection Agency. The discussion and joint comparative testing were carried out to assess the potential for alignment of the existing U.S. and the proposed CEC test procedures for the measurement of noise from portable air compressors.

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
CONSTRUCTION NOISE CONTROL TECHNOLOGY INITIATIVES	550/9-80-313	PB81-186983

This report includes background information on the impact of construction noise, actions that have been carried out by Federal, State and local governments to control construction equipment and construction site noise, and a forecast of construction activity for the period 1980-1985.

FEDERAL AGENCY NOISE CONTROL TECHNOLOGY, RESEARCH DEVELOPMENT, AND DEMONSTRATION PROJECTS ON INDUSTRIAL MANUFACTURING, MINING AND CONSTRUCTION EQUIPMENT DURING THE FISCAL YEAR 1980	550/9-80-317	PB81-138471
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This report is a compilation of Federally sponsored research projects in the areas of industrial machinery, mining, and construction equipment. It includes more than 35 projects conducted by 12 Federal agencies. The types of research involved may be classified into three categories:

- o Performing noise assessments or developing guidelines
- o Developing and/or demonstrating noise control for existing technology
- o Developing and/or demonstrating innovative noise technology designs

CONFERENCE ON GENERAL AVIATION AIRPORT NOISE AND LAND USE PLANNING	550/9-80-320-A	PB82-218090
	550/9-80-320-B	PB82-218108
	550/9-80-320-C	PB82-218116

This report constitutes the proceedings of the three-day conference on general aviation airport noise and land use planning. Included are advance copies of the speakers' presentations that were available at the conference, a summary of each of the five panels, a noise bibliography, and a transcription of all discussions including audience participation.

NOISE AND URBAN PEDESTRIAN AREAS	550/9-80-321	*
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EL RUIDO UN PROBLEMA PARA LA SALUD (SPANISH VERSION OF NOISE A HEALTH PROBLEM)	550/9-80-400	
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A translation of "Noise: A Health Problem," a pamphlet written for the general public, in layman's language, on the physical, psychological and emotional hazards of excessive noise on health and welfare.

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
PUBLIC EDUCATION/INFORMATION MANUAL FOR NOISE	550/9-80-401	PB82-235847

This manual is designed to assist with the implementation of a State and/or local noise control public education and information program. The purposes of the program are: a) To increase the awareness and knowledge levels of the general public with respect to the potentially harmful health effects of excessive noise and the effects of noise on their quality of life; b) To foster and promote locally and individually indicated noise control actions; c) To motivate and generate the support of the general public, public/private agencies and organizations, groups and associations for the increased role of State and local governments in noise control and abatement; and d) To encourage citizens to participate in the design and implementation of local noise control efforts.

EFFECTS OF AIRPORT NOISE ON A NEIGHBORING STATE-REPORT TO CONGRESS	550/9-80-424	(Available DOT)
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This report is submitted to Congress in response to Section 8 of the Quiet Communities Act of 1978 (P.L. 95-609) which resulted from Congressional concern that aircraft noise from some airports may impact communities located in another state. The study included three semi-independent programs: (1) Noise Measurement, (2) Noise Modeling, and (3) Community Response. The noise exposure conditions, and the relative effectiveness of alternative noise control actions, were investigated for the existing 1980 operations and for projected 1990 and 2000 operations.

NOISE VIOLATIONS: GUIDANCE MANUAL FOR STATE AND LOCAL PROSECUTORS	550/9-80-425	PB82-239658
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The purpose of this manual is to provide guidance to prosecutors who choose to take legal action against violators of State or local noise regulations; its intent is to assist prosecutors preparing for and conducting a trial--from drafting the complaint to submitting jury instructions.

GUIDELINES AND SAMPLE TRAINING WORKSHOP FOR POLICE ENFORCEMENT OF NOISE REGULATIONS	550/9-80-426	PB82-250119
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The purpose of this document is to provide material suitable for use in training State and local police officers to enforce their noise control laws.

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
STATE AND LOCAL NOISE ENFORCEMENT LEGAL MEMORANDA	550/9-80-427	PB82-240359

The legal memoranda included in this document address some of the more prevalent enforcement issues which have arisen in connection with State and local noise control activities. This collection of legal memoranda is organized according to the following two distinct phases of noise control activities: (1) ordinance drafting; and (2) prosecution.

PROTECTIVE NOISE LEVELS (CONDENSED VERSION OF "LEVELS DOCUMENT")	550/9-79-100	PB82-138827
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This publication is intended to promote understanding of EPA's findings about levels of environmental noise that protect public health and welfare. It seeks to clarify the proper use of the 1984 "Levels Document" by interpreting its contents in less technical terms: The manual deals with measurement descriptors of environmental noise. Also addressed are the best understood effects of noise on people (hearing damage, speech interference and annoyance). Protective levels are summarized.

OCCUPATIONAL HEARING LOSS WORKERS COMPENSATION AMS UNDER STATE AND FEDERAL PROGRAMS	550/9-79-101	PB82-138769
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The purpose of this report is to investigate workers compensation for permanent noise-induced hearing loss in 50 States and the federal government. The report examines claims activity; some of the main compensation rules, their scientific support and claims procedures. Finally, the Federal Employee Compensation (FEC) program for hearing loss is studied.

COMPARISON OF VARIOUS METHODS FOR PREDICTING THE LOUDNESS & ACCEPTABILITY OF NOISE, PART II --EFFECTS OF SPECTRAL & TONAL COMPONENTS	550/9-79-102	PB82-138702
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The present report is a continuation of an earlier report by Scharf, Hellman and Bauer (1977). The objectives are (1) to determine whether subjective judgments of particular types of noise, categorized by spectral shape, are better approximated by some descriptors (frequency weightings and calculation procedures) than by others, and (2) to investigate the role of tonal components in these studies and to assess the adequacy of several tone-correction procedures.

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
ANNOYANCE, LOUDNESS, AND MEASUREMENT OF REPETITIVE TYPE OF IMPULSIVE NOISE SOURCES	550/9-79-103	PB82-138702
<p>This study was undertaken to evaluate subjective and objective aspects of moderate levels of noise from impulsive sources. A detailed review of the literature on the subjective aspects was emphasized. The annoyance and loudness from a wide variety of repetitive impulse noises were evaluated. These results were applied to the evaluation of impulsive noise from a number of specific noise sources.</p>		
BACKGROUND DOCUMENT FOR PROPOSED REVISION TO RAIL CARRIER NOISE EMISSION REGULATIONS	550/9-79-207	PB82-137563
RAILYARD NOISE MEASUREMENT DATA APPENDIX B TO BACKGROUND DOCUMENT FOR PROPOSED REVISION TO RAIL CARRIER NOISE EMISSION REGULATION	550/9-79-207	PB82-145715
OFFICIAL DOCKET FOR PROPOSED REVISION TO RAIL CARRIER NOISE EMISSION REGULATION, PART I	550/9-79-208	PB82-137902
OFFICIAL DOCKET FOR PROPOSED REVISION TO RAIL CARRIER NOISE EMISSION REGULATION, PART II	550/9-79-208	PB82-137910
BACKGROUND DOCUMENT FOR FINAL INTERSTATE RAIL CARRIER NOISE EMISSION REGULATION: SOURCE STANDARDS	550/9-79-210	PB82-137571
ENVIRONMENTAL IMPACT STATEMENT FOR FINAL INTERSTATE RAIL CARRIER NOISE EMISSION REGULATION: SOURCE STANDARD	550/9-79-211	PB82-136490
REGULATORY ANALYSIS SUPPORTING THE GENERAL PROVISIONS FOR PRODUCT NOISE LABELING	550/9-79-255	PB80-106933
REGULATORY ANALYSIS SUPPORTING THE NOISE LABELING REQUIREMENTS FOR HEARING PROTECTORS	550/9-79-256	PB80-101819
REGULATORY ANALYSIS OF THE NOISE EMISSION REGULATIONS FOR TRUCKMOUNTED SOLID WASTE COMPACTORS	550/9-79-257	PB80-101488

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
FINAL ENVIRONMENTAL & ECONOMIC IMPACT STATEMENT NOISE EMISSION REGULATIONS FOR TRUCK-MOUNTED SOLID WASTE COMPACTORS	550/9-79-258	PB80-101777
NOISE TECHNOLOGY RESEARCH NEEDS & THE RELATIVE ROLES OF THE FEDERAL GOVERNMENT & THE PRIVATE SECTOR	550/9-79-311	
FEDERAL LABORATORIES AND RESEARCH FACILITIES WITH NOISE CAPABILITIES	550/9-79-312	PB80-178163
NOISE EXPOSURE OF CIVIL AIRCARRIER AIRPLANES THROUGH THE YEAR 2000 VOLS. 1 & 2	550/9-79-313A 550/9-79-313B	PB82-250135 PB82-250143

This report presents results of an estimate of the national exposure to aircarrier aircraft noise through the year 2000. The forecast was carried out to show the effect of two types of noise abatement options. The first consisted of modifications to FAR Part 36 proposed to the Federal Aviation Administration (Notice 76-22) by the U.S. Environmental Protection Agency which would establish lower noise limits for newly designed aircraft in the years 1980 and 1985. The second type consisted of alternative power cutback procedures (FAA AC 91-39 and two variations of ALPA/Northwest Airlines procedure) coupled with minor variations on approach procedures.

NOISE EFFECTS OF CONCORDE OPERATIONS JFK INTERNATIONAL AIRPORT (NOVEMBER 1977 THROUGH NOVEMBER 1978)	550/9-79-316
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The FAA measured the noise at several communities in the vicinity of JFK International Airport due to the operations of Concorde and subsonic aircraft. This report presents the results of an analysis by the EPA of the FAA noise data which leads to interpretations of the effects of Concorde operations on the public that are different in significant respect from what might be assumed from a cursory reading of the FAA reports.

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
PROPAGATION OF URBAN CONSTRUCTION SITE NOISE ALONG STREET CORRIDORS (NBSIR 79-1594)	550/9-79-(S&R)	PB82-138280

An existing urban sound propagation model has been applied to the specific problem of estimating the propagation of noise from urban construction sites along street corridors. Discussion summarizes the development of the propagation model and computer programs used to estimate sound propagation. The propagation model has been applied to five different construction site orientations resulting from two city block configurations. For each of the site orientations, the estimated values of attenuation versus distance in the streets surrounding individual sites are presented. Assuming the sound level at the construction site is known, the procedure to be used to determine sound levels in the surrounding streets is also provided.

HILLSBOROUGH COUNTY, FLORIDA, CASE HISTORY OF A COUNTY NOISE CONTROL PROGRAM	550/9-79-404	PB82-226051
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Development of a county noise program in the southeastern U.S. Discusses the transition from a nuisance to quantitative ordinance based on receiving land use, the administration of the new program, and results.

COLORADO SPRINGS, COLORADO, CASE HISTORY OF A COUNTY NOISE CONTROL PROGRAM	550/9-79-405	PB82-226069
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Comprehensive study of the development of a municipal noise control program with particular focus on motor vehicle noise control. Includes history key program components, and an evaluation of results.

SAN DIEGO, CALIFORNIA, CASE HISTORY OF A MUNICIPAL NOISE CONTROL PROGRAM	550/9-79-406	PB82-226739
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The development of a successful municipal noise control program from initiation by a Task Force and citizen survey through ordinance development and passage to administration and enforcement. Includes public education methods, legal approaches, the philosophy of enforcement and three case studies illustrating the city's implementation of noise control.

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
THE ABILITY OF MILDLY HEARING IMPAIRED INDIVIDUALS TO DISCRIMINATE SPEECH IN NOISE	550/9-78-100	PB-280480

The purpose of the investigation was to explore the relationship between hearing level at various audiometric frequencies and speech discrimination in different noise backgrounds. The study was designed specifically to test the American Academy of Ophthalmology and Otolaryngology's (AAOO) selection of a 26-dB average of 500, 1000, and 2000 Hz, as the point above which hearing handicap occurs. The study attempted to see if there were differences among individuals whose hearing was at or better than the low fence, and if so, what factors caused or affected the differences. The AAOO formula adopted the inclusion of 3000 Hz to assess hearing handicap as a result of this study.

FOREIGN NOISE RESEARCH IN NOISE EFFECTS	550/9-78-101	PB-279383
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This volume has been compiled from the results of a survey on foreign noise effects research from 1975-77. The survey was conducted for the second interagency noise effects research panel. Included in the volume are 211 project descriptions, from twenty-two countries. Projects are reported under the following subject areas: noise-induced hearing loss, non-auditory health effects, psychological and performance effects, noise effects on sleep, communication interference, community or collective response, effects of noise on domestic animals and wildlife, noise environment determination, and noise concomitant with vibration.

FEDERAL NOISE RESEARCH IN NOISE EFFECTS	550/9-78-102	PB280335
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The Federal Noise Effects Research Program was documented and reviewed in 1977. At that time, the program had expanded slightly over the previous years, with more agencies participating. The program was reasonably comprehensive and, in general, coordinated with no unjustified overlap of efforts. Research needs to support and justify regulatory and standards requirements were identified by the Panel as being of the highest priority.

PROCEEDINGS: SURFACE TRANSPORTATION EXHAUST SYSTEM NOISE SYMPOSIUM, OCTOBER 11-13, 1977	550/9-78-206	PB82-141425
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<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR PROPOSED REVISION TO RAIL CARRIER NOISE EMISSION REGULATION	550/9-78-207	PB82-137555
PLAN FOR THE DEVELOPMENT OF VOLUNTARY STANDARDS ON ENVIRONMENTAL SOUND IN RESPONSE TO FEDERAL AGENCY NEEDS	550/9-78-(S&R)	*
GUIDELINES FOR THE PREPARATION OF PROCEDURES FOR THE MEASUREMENT OF SOUND SOURCE EMISSION	550/9-78-(S&R)	*
WHO'S WHO IN FEDERAL NOISE PROGRAMS	550/9-78-300	PB-279520
FOREIGN NOISE RESEARCH IN SURFACE TRANSPORTATION	550/9-78-301	*
FOREIGN NOISE RESEARCH IN MACHINERY/CONSTRUCTION EQUIPMENT	550/9-78-302	*
FOREIGN NOISE RESEARCH IN AVIATION	550/9-78-303	*
<p>This report provides a broad overview of the international research effort in aviation noise abatement and control that was completed or underway during 1976/1977. 116 Research Projects were reported by 8 countries. Reports included: Identification of Program Sponsor, Type of Research, Funding Levels, Program Summary and References. Activities covered ranged from basic research, through technology development and, systems demonstration programs including noise prediction and measurement methodologies.</p>		
FEDERAL RESEARCH, DEVELOPMENT AND DEMONSTRATION PROGRAMS IN SURFACE TRANSPORTATION NOISE	550/9-78-305	*
FEDERAL RESEARCH, DEVELOPMENT AND DEMONSTRATION PROGRAMS: MACHINERY AND CONSTRUCTION NOISE	550/9-78-306	*

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
FEDERAL RESEARCH, TECHNOLOGY AND DEMONSTRATION PROGRAMS IN AVIATION NOISE	550/9-78-307	*

This report, prepared by the Federal Interagency Aviation Noise Research Panel is a compilation of the research, technology, and demonstration (RT&D) activities of Federal agencies and departments in the area of aviation noise during the period FY 75-78. The report contains qualitative assessments of these activities as well as recommendations for future areas of work. Each Agency's projects are summarized, including levels of funding for each fiscal year. In addition, a bibliography of completed research reports, by Agency, is included. Aviation noise RT&D activities reported are grouped into two types of programs. The first group comprises Research and Technology Programs. It encompasses acoustic fundamentals and noise generation, suppression, transmission, and prediction. The second group is that of Demonstration Programs and Systems Studies. Programs in this group are intended to explore the actual effectiveness and appropriateness of applied technology for aircraft noise abatement with realistic hardware.

FEDERAL NOISE RESEARCH EPA SUMMARY AND ASSESSMENT	550/9-78-308	*
POTENTIAL EFFECTIVENESS OF BARRIERS TOWARDS REDUCING HIGHWAY NOISE EXPOSURE ON A NATIONAL SCALE	550/9-78-309	PB-288109

This study contains calculations used to assess the potential effectiveness of barriers toward reducing noise exposure from the federal-aid highway system. Noise exposure, in terms of the numbers of people exposed to L_{dn} greater than 60, 65, 70 and 75 dB, from the primary federal-aid system was computed for present traffic flow and projected traffic through the year 2000. Reductions in noise exposure were computed for several scenarios of constructing barriers along urban interstate highways. It was found that significant reduction of noise exposure would require barriers along most of the urban interstate system. The benefit (in terms of reduction of exposed population) per mile of barrier construction was found to be greatest at high noise levels ($L_{dn} \geq 75$ dB). It was concluded that barriers would not provide a feasible method for abating noise on a national scale. Their main benefit is to provide relief in extremely noisy local applications.

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
STATUS OF NOISE CONTROL IN U.S.A.	550/9-78	
<p>The purpose of this report is to analyze the status of state and local noise control programs in the U.S. Three elements of the programs have been investigated and reported. These include: Public Awareness, Legislative, and Noise Control Implementation.</p>		
UNDERSTANDING NOISE AND NOISE CONTROL INSTRUCTION UNITS FOR OPERATING ENGINEERS IN APPRENTICESHIP PROGRAMS	500/9-78	(Available GPO)
<p>This document is designed to serve as the basis for a self-contained program of instruction addressing noise in the total environment of the operating engineer. It is designed to be used as an independent program of instruction for operating engineer apprentices, or to be integrated with other components of a complete apprenticeship training program.</p>		
MEASURES OF NOISE LEVEL: Their Relative Accuracy in Predicting Objective and Subjective Response to Noise During Sleep	600/1-77-010	PB-257683
SPEECH LEVELS IN VARIOUS NOISE ENVIRONMENTS	600/1-77-025	PB-270053
<p>A study to determine average speech levels used by people when conversing in different levels of background noise. The non-laboratory environments where speech was recorded were: high school classrooms, homes, hospitals, department stores, trains and commercial aircraft.</p>		
BEHAVIORAL AND PHYSIOLOGICAL CORRELATES OF VARYING NOISE ENVIRONMENTS	600/1-77-038	PB-271713
<p>The study used 80 male college students divided into high and low anxiety groups. Each subject experienced a household noise profile under a quiet (50 dBA), intermittent (84 dBA) and continuous (84 dBA) noise condition, while performing either an easy or difficult pursuit tracking task. Heart rate, electromyographic potentials, and tracking error responses were evaluated. Results indicated significant (P.01) main effects for task difficulty, noise condition and anxiety level (as measured by the IPAT Self Analysis Form) of subjects.</p>		

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
URBAN NOISE SURVEY	550/9-77-100	PB82-148982

The report presents the results of a social survey of over 2,000 respondents at 24 selected urban locations throughout the United States. A social survey (coupled with an extensive noise measurement program to acoustically describe the urban environment) was conducted to sample opinion over the entire range of noise exposure and population density characteristic of non rural America. The objectives of the National Urban Noise Survey were to establish relationships between noise exposure and human response as a function of situational and attitudinal variables associated with the life styles of people residing in urban areas away from highways and airports, as well as to establish the outdoor noise levels at which noise becomes the salient factor in the generation of annoyance as a response indicator.

COMPARISON OF VARIOUS METHODS OF PREDICTING THE LOUDNESS & ACCEPTABILITY OF NOISE (PART I)	550/9-77-101	PBB1-243826
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This report presents the results of a detailed examination of 23 studies in which listeners judged either the loudness or acceptability of sound. This investigation compares commonly employed frequency weightings and calculation rating schemes with respect to their ability to predict the subjective effect of sound. These studies included data available from both the laboratory and the field, and encompassed a wide variety of natural and simulated noise stimuli.

EPA ANALYSIS OF THE AMENDMENT TO DELETE ENGINE BRAKE DECELERATION TESTING FROM THE MEDIUM AND HEAVY TRUCK NOISE REGULATION	550/9-77-200	PB82-137894
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A presentation of the questions posed and an assessment of the issues related to the consideration of the amendment to delete deceleration testing from the medium and heavy truck noise regulation (40 CFR 205) is reported. Although noise emissions from engine brake operation are unique in character, it appears that noise control using engine exhaust muffling for the vehicle acceleration mode also reduces engine brake deceleration sound levels. Economic impacts of vehicle deceleration testing using engine brakes appear minimal if engine brakes are installed at the point of manufacture. The report contains EPA Regulatory Docket No. ONAC 77-3 exhibiting all comments submitted by interested parties.

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
PROPOSED WHEEL AND CRAWLER TRACTOR NOISE EMISSION REGULATION. PART I, DRAFT ENVIRONMENTAL IMPACT STATEMENT, IMPACT STATEMENT. PART II, BACKGROUND DOCUMENT	550/9-77-250	PB82-136979
UNIVERSITY NOISE RESEARCH (EPA Noise Seminar, October 18-20, 1976)	550/9-77-300	PB-265114
<p>The purpose of the seminar was to help EPA and other government agencies become aware of university noise control sources. Principal investigators of active, industrially-related research programs at universities were invited to present information about work recently completed (during 1975 or 1976), or in progress, or planned for 1977. Papers were solicited on research, development and demonstration projects in all areas of noise control except aircraft noise. Emphasis was placed on industrially sponsored, hardware oriented projects.</p>		
MANUAL ON INSPECTION OF FEDERAL FACILITIES FOR COMPLIANCE WITH NOISE ABATEMENT STANDARDS	550/9-77-350	PB-269298
THE TRANSFER FUNCTION OF QUARRY BLAST NOISE AND VIBRATION INTO TYPICAL RESIDENTIAL STRUCTURES	550/9-77-351	
<p>An experimental program was conducted to determine the transfer function of quarry blast noise and vibration into typical structures. Four distinct noise and vibration signals are produced inside nearby dwellings. It was determined that due to resonances excited within the dwellings, the noise and vibration excitation was greater inside the dwellings than outside.</p>		
ECONOMIC AND SOCIAL IMPACT OF OCCUPATIONAL NOISE EXPOSURE REGULATIONS	550/9-77-352	PB-276593

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
AIR INSTALLATIONS COMPATIBLE USE ZONES (AICUZ)	550/9-77-353	PB-271441

The military services within the Department of Defense are currently working to alleviate the noise problem at their airfields. Most of these efforts are grouped in a program entitled the Air Installations Compatible Use Zones (AICUZ). The Noise Control Act of 1972 designated EPA as the coordinator of Federal noise programs to ensure that they are consistent and mutually reinforcing. EPA believes that one way to facilitate coordination is to promote an understanding of other agencies programs by publishing a series of Federal noise program guides. This document covers some important features of DOD's AICUZ program, its problems and relationship to other agencies noise programs.

FEDERAL NOISE PROGRAM REPORTS SERIES, DEPARTMENT OF HOUSING AND URBAN DEVELOP- MENT: NOISE ABATEMENT AND CONTROL POLICY	550/9-77-354	PB-271655
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This report discusses some of the features and problems of the Department of Housing and Urban Development's Noise Abatement and Control Policy. Its purpose is to serve as aid to persons concerned with noise abatement and control activities in the Federal Government.

COMPARISON OF HIGHWAY NOISE PREDICTION MODELS	550/9-77-355	PB-276710
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A review and comparison has been conducted of three highway noise prediction models: NCHRP, TSC, and Wyle. The first two are those approved by the Federal Highway Administration; the third was developed for EPA. The elements comprising each model are analyzed in detail, including basic formulation, vehicle noise levels, propagation, treatment of various road geometries, and shielding by barriers. Significant differences among the models were found. A series of charts is presented whereby differences among the models may be estimated for particular input data. Comparison between measured roadside levels and predictions from the three models are also presented.

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
A MANUAL FOR REVIEW OF HIGHWAY NOISE IMPACT	550/9-77-356	PB-276509

A manual has been prepared which presents a procedure for reviewing noise impact of proposed highway projects. The manual reviews Federal Highway Administration policy for noise impact, and includes specific steps for reviewing environmental impact statements and noise study reports prepared for proposed highway projects. The noise policy of the Department of Housing and Urban Development and noise levels identified by the Environmental Protection Agency are also reviewed, so that a complete assessment of the impact of expected noise may be made. A noise prediction model, consisting of charts, nomograms, and simple equations, is presented so as to enable an independent check of predicted levels presented in an EIS. The noise model (which includes barriers) is itself suitable for predicting roadside noise levels.

FEDERAL NOISE PROGRAM REPORT SERIES, DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION: NOISE POLICY AND RELATED ENVIRONMENTAL PROCEDURES	550/9-77-357	PB-285940
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This document discusses the important features of FHWA's noise policy and related environmental procedures. It also identifies associated problems with the policy without attempting to present an "evaluation." No examination of how the policy actually works in the field was undertaken. The purpose of the report is to serve as aid to persons concerned with noise abatement and control activities in the Federal Government.

A SURVEY OF ENFORCEMENT PRACTICE WITH RESPECT TO NOISE CONTROL REQUIREMENTS IN BUILDING AND COSTS IN A NUMBER OF EUROPEAN COUNTRIES	550/9-77-400	PB82-250176
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The report introduces the problem of effective enforcement of noise control requirement in building codes throughout Europe, examines in detail two approaches of special interest and finally proposes a new approach to the endorsement of building code noise requirements.

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
NOISE EMISSION MEASUREMENTS FOR REGULATORY PURPOSES	550/9-77-401	PB-264667

A review is given of the measurement needs attendant to regulation of the noise generated and emitted by commercial products. The report is divided into three major parts. Part I is a discussion of overall measurement requirements. Part II is designed as a checklist for the evaluation of the suitability of a noise measurement standard for a particular class of products. Part III consists of a series of flow charts depicting the development of appropriate procedures for the measurement of product noise emission.

CALCULATIONS OF DAY/NIGHT LDN RESULTING FROM CIVIL-AIRCRAFT OPERATIONS AND ADDENDUM	550/9-77-450	PB-266165
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A method is described for calculating values of Day/Night Levels (L_{dn}) at a point due to aircraft operations from civil airports. The procedure is to determine distances between the point in question on the ground and the aircraft flight tracks and runway. A series of charts give L_{dn} values for different types of aircraft in terms of these distance parameters. This method is not suitable for generating noise contours (lines of equal L_{dn} value) although a method is described for estimating area and size of any given contour.

GUIDELINES FOR PREPARING ENVIRONMENTAL IMPACT STATEMENTS ON NOISE	550/9-77	AD A044-384 (Office Naval Research)
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TOWARDS A NATIONAL STRATEGY FOR NOISE CONTROL AND ADDENDUM	550/9-77	GPO
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This document was developed to continue the dialogue on the overall goals of the noise program, the role of government, the role of consumers, and the role of industry in noise control, along with the selection of specific abatement and enforcement activities for EPA. It establishes a general framework for making decisions on the best strategy that EPA can employ to combat noise pollution.

ENVIRONMENTAL NOISE ASSESSMENT, MOUNTAIN VIEW, GEORGIA	906/9-77	PB-271537
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<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
MODEL COMMUNITY NOISE CONTROL ORDINANCE	550/9-76-003	PB-262005
<p>The Model Community Noise Control Ordinance is intended to be a basic tool which communities, both large and small, can use to construct noise control ordinances suited to local needs and conditions.</p>		
BACKGROUND DOCUMENT FOR PORTABLE AIR COMPRESSORS	550/9-76-004	PB-250430
BACKGROUND DOCUMENT FOR RAILROAD NOISE	550/9-76-005	PB-251713
<p>This document contains the technical, economic, health and welfare analysis and other pertinent data and information utilized by the Environmental Protection Agency in the development of the final Interstate Rail Carrier Noise Emission Regulation.</p>		
STATE AND MUNICIPAL NOISE CONTROL ACTIVITIES 1973-1974	550/9-76-006	PB-251999
<p>This report presents an assessment of the environmental noise effort and noise control needs in the 50 states and 235 incorporated municipalities with populations greater than 75,000. The document has been used by EPA as a guide for developing its technical assistance program.</p>		
SOME CONSIDERATIONS IN CHOOSING AN OCCUPATIONAL NOISE EXPOSURE REGULATION	550/9-76-007	PB-251408
<p>Some issues in conflict regarding the proposed OSHA standards for occupational exposure to noise are examined. These include material impairment, the extent of possible hearing loss, non-auditory effects, and the nature of social and economic costs and benefits of regulation at 85 dBA and 90 dBA exposure limits. A preliminary analysis of the methodology and difficulties in arriving at cost-benefit estimates is included. Regulatory alternatives such as new plant standards, industry-specific standards, variance and abatement agreements, administrative controls, and personal protective equipment are explored.</p>		
BACKGROUND DOCUMENT FOR MEDIUM AND HEAVY TRUCK NOISE EMISSION REGULATIONS	550/9-76-008	PB262007

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
REASSESSMENT OF NOISE CONCERNS OF OTHER NATIONS, VOLUME I	550/9-76-011	PB-259923
REASSESSMENT OF NOISE CONCERNS OF OTHER NATIONS, VOLUME II	550/9-76-012	PB-259924
NOISE STANDARDS FOR AIRCRAFT TYPE CERTIFICATION (Modification to FAR Part 36)	550/9-76-013	PB-262401

This document presents and discusses the background data used by the Agency in the development of proposed noise control regulations for promulgation by the FAA in conformance with the Noise Control Act of 1972. The proposed regulations pertain to control of airplane noise at the source and would amend the existing Federal Aviation Regulations PART 36 (FAR 36).

INFLATIONARY IMPACT STATEMENT FOR PORTABLE AIR COMPRESSOR REGULATION *

This document summarizes the effects on costs incurred by the public and private sectors as a result of the Noise Emission Regulations for Portable Air Compressors. Included are economic impact estimates, impacts on inflation, environmental improvements, alternatives considered, and impact on materials.

ABOUT SOUND

550/9-76

This booklet contains, in layman language, fundamentals of acoustics and noise. A bibliography is provided as well as a glossary for more detailed technical information on specific aspects of this subject.

U.S. EPA NOTICE OF PROPOSED RULE MAKING ON SPECIAL LOCAL DETERMINATIONS PROCEDURES FOR INTERSTATE RAILROAD NOISE EMISSIONS STANDARDS AND INTERSTATE MOTOR CARRIER NOISE EMISSION STANDARDS AND GUIDELINES FOR STATE AND LOCAL GOVERNMENTS ON THE FILING AND PROCESSING OF APPLICATIONS FOR PREEMPTION WAIVER DETERMINATIONS

550/9-76

(Available from 41 Federal Register #52317 and #52320)

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
MEDIUM AND HEAVY TRUCKS NOISE EMISSION STANDARDS	550/9-76	*

On March 31, 1976, the EPA issued a regulation governing noise emissions from newly manufactured medium and heavy trucks. That regulation was issued under Section 6 of the Noise Control Act of 1972. This document presents and discusses the background data used by the Agency in setting the standards contained in the regulation. Presented is a comprehensive discussion of the information available in March 1976 on the environmental, testing, technological, and economic aspects of medium and heavy truck noise control.

FEDERAL NOISE EFFECTS RESEARCH, FY 73-FY 75	600/1-75-001	PB241751
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Potential effects of noise on the public health and welfare are described, limitations and gaps in necessary knowledge of those effects are identified as research needs, and eight categories for analyzing noise effects research are presented. The Federal research programs were summarized for each of the eight health effects categories. The Noise Effects Research Panel through its collective knowledge of the needs and the current research identified specific research areas which needed additional emphasis in order to provide accurate and thorough information on effects of noise. The Panel concluded that the then current programs need continued and in some instances expanded support in order to provide necessary information on the effects of noise.

NOISE SOURCE REGULATIONS IN STATE AND LOCAL NOISE ORDINANCES	550/9-75-020	PB-245158
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This document updates NTID 73.1, dated March 1, 1973. It provides a summary of state and local noise laws in existence in the U.S. up thru December 1974.

GUIDELINES FOR DEVELOPING A TRAINING PROGRAM IN NOISE SURVEY TECHNIQUES	550/9-75-021	AD-A016677
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INFORMATION ON FAA CERTIFICATION OF AIRCRAFT	550/9-75-022	PB-242583
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A literature search and study has been made on the following; with special reference to transport category aircrafts: (1) Certification process; (2) Specific types and models certificated since 1969; (3) Recent annual production statistics or estimates.

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
FIRST REPORT ON STATUS AND PROGRESS OF NOISE RESEARCH AND CONTROL PROGRAMS IN THE FEDERAL GOVERNMENT. VOLUME I, REPORT IN STATUS AND PROGRESS	550/9-75-023	PB-243447
FIRST REPORT ON STATUS AND PROGRESS OF NOISE RESEARCH AND CONTROL PROGRAMS IN THE FEDERAL GOVERNMENT. VOLUME II, RESEARCH PANEL REPORTS	550/9-75-023	PB-243448
NATIONAL MEASURE OF AIRCRAFT NOISE IMPACT THROUGH THE YEAR 2000	550/9-75-024	PB-243522

This program was undertaken for the Office of Noise Abatement and Control, Environmental Protection Agency, to evaluate the nationwide community impact of aircraft noise through the year 2000, considering a number of aircraft/airport noise reduction alternatives. The study was based on the evaluation of operations at three airports - Los Angeles International, St. Louis, and Washington Dulles.

PASSENGER NOISE ENVIRONMENTS OF ENCLOSED TRANSPORTATION SYSTEM, JUNE 1975	550/9-75-025	PB-2455409
RAILROAD NOISE EMISSION STANDARD. BACKGROUND DOCUMENT	550/9-76-005	PB-251717

This document contains the technical, economic, health and welfare analyses and other pertinent data and information utilized by the Environmental Protection Agency in the development of the Interstate Rail Carrier Noise Emission Regulation.

NOTICE OF PROPOSED RULE MAKING ON TWO-SEGMENT ILS NOISE ABATEMENT APPROACH FOR TURBO-JET ENGINE-POWERED AIRPLANES (EPA/DOT)	550/9-75	DOT
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In accordance with a recommendation by the Administrator of the Environmental Protection Agency, the Federal Aviation Administration is considering an amendment to Section 91.87 of the Federal Aviation Regulations which would provide noise relief to communities in the vicinity of airports by prescribing a two-segment Instrument Landing System (ILS) approach for civil turbojet engine-powered airplanes.

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>HTIS PUBLICATION NO.</u>
NOTICE OF PROPOSED RULE MAKING ON REDUCED FLAP SETTING NOISE ABATEMENT APPROACH FOR TURBO-JET ENGINE-POWERED AIRPLANES (EPA/DOT)	550/9-75	DOT

In accordance with a recommendation by the Administrator of the Environmental Protection Agency, the Federal Aviation Administration is considering an amendment to Section 91.85 of the Federal Aviation regulations which would provide noise relief to communities in the vicinity of airports by prescribing reduced flap setting procedures for civil turbojet powered airplanes.

AIRCRAFT NOISE CERTIFICATION RULE FOR SUPERSONIC CIVIL AIRCRAFT	550/9-75	*
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This report presents the supporting data for a proposed noise certification rule for supersonic civil aircraft. The background information presented shows that supersonic transports are inherently noisier than subsonic jet transports. It is concluded that current designs of SST aircraft cannot comply with FAR 36 but that future designs can at least meet those requirements. In view of these conclusions as well as the other factors discussed, five of the various regulatory options are recommended for further consideration for the development of one or more rules.

INFORMATION ON FAA CERTIFICATION OF AIRCRAFT	550/9-75	PB-242583
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Under Section 7 of the Noise Control Act of 1972 (Public Law 92-574), the Environmental Protection Agency (EPA) is authorized to propose to the Federal Aviation Administration aircraft noise regulations. This study provides an overview of aircraft type certification regulations (e.g., original type, supplemental, airworthiness, etc.) through which aviation noise regulations are or could be implemented.

CONTROL OF MOTORCYCLE NOISE, TECHNOLOGY AND COST INFORMATION, VOLUME I	550/9-74-001A	PB-257727
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The purpose of this study was to (1) determine the noise levels of current (1973) model motorcycles, (2) evaluate available motorcycle noise reduction technology to determine noise reductions feasible for future new machines, and finally (3) to estimate the increases in manufacturing cost required to achieve these noise reductions.

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
CONTROL OF SNOWMOBILE NOISE. VOLUME I, TECHNOLOGY AND COST INFORMATION	550/9-74-003A	PB-257680

This document contains information useful for the development of noise emission standards for snowmobiles. Topics covered include information on snowmobile construction, noise characteristics of models currently on the market, and noise reduction techniques and costs necessary to achieve specified noise levels.

INFORMATION OF LEVELS OF ENVIRONMENTAL NOISE REQUISITE TO PROTECT PUBLIC HEALTH AND WELFARE WITH AN ADEQUATE MARGIN OF SAFETY	550/9-74-004	PB-239429
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This document identifies noise levels consistent with the protection of public health and welfare against hearing loss annoyance, and activity interference as mandated by the Noise Control Act of 1972.

DESIGN OF A LOW-COST SOUND LEVEL METER	550/9-74-008	AB-783808
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POPULATION DISTRIBUTION OF THE UNITED STATES AS A FUNCTION OF OUTDOOR NOISE LEVEL (2 VOLUMES)	550/9-74-009A 550/9-74-009B	PB-235002 PB-257617
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This report summarizes the planning, conduct and results of a noise survey in 100 sites in urban areas across the United States and the use of these results coupled with other existing data, to provide an estimate of the outdoor noise levels experienced in residential areas by the United States population. It concludes that there are more than 90 million people living in areas in excess of 55 L_{dn} and 1.3 million in areas in excess of 75 L_{dn} . The summary is contained in Volume I. Volume II contains data from each site.

LAWN MOWERS: NOISE AND COST OF ABATEMENT	550/9-74-011	PB-234932
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This document contains information useful for the development of noise emission standards for lawn mowers. Topics covered include information on lawn mower construction, noise characteristics of models currently on the market, and noise reduction techniques and costs necessary to achieve specified noise levels.

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
NOISE IN RAIL TRANSIT CARS INCREMENTAL COSTS OF QUIETER CARS	550/9-74-012	PB-234992

The U.S. rail rapid transit systems, car operations, and the car building industry are described in relation to the procurement of quieter cars. The noise environment of passengers in rapid transit cars is discussed and the major noise sources and paths of noise transmission into cars are delineated. For essentially all combinations of car noise-control modifications deemed technically and economically feasible for implementation in new vehicles, estimates are presented of the associated noise reductions, initial costs, and operating costs. It is concluded that significant reductions in in-car noise under typical operating conditions can be achieved at incremental costs that are small percentages of the total car costs.

NOISE MEASUREMENTS OF CONCORDE 02 APPROACH AND TAKEOFF AT DALLAS, FT. WORTH AND DULLES INTERNATIONAL AIRPORTS	550/9-74-013	PB-245156
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The numerous data points measured at Dallas-Ft. Worth and Dulles International Airports and plotted as a function of level versus distance show a scatter sometimes exceeding +5EPNdB. Direct comparisons of Concorde and 707 approach noise were possible at Dulles. These few measurements indicate the Concorde noise levels relative to the 707 levels to be less, in general, at 2.6 n.mi. and greater at 3.6 n.mi. from threshold. It would appear that when measured data are compared with the theoretical curves there is no reason to believe that the noise levels measured under FAR 36 or Annex 16 conditions, claimed by the Concorde developers will not be achievable.

BACKGROUND DOCUMENT TO PROPOSED INTERSTATE MOTOR CARRIER REGULATIONS	550/9-74-017	PB-242554
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This document presents and discusses the background data used by the agency in setting the standards issued in the Interstate Motor Carrier Noise Emission Regulations. Presented is a comprehensive discussion of the information available in October 1974 on the environmental, testing, technological, and economic aspects of interstate motor carrier noise control.

CIVIL AVIATION STUDIES AND INTERAGENCY COORDINATING ORGANIZATION, VOLUME I	550/9-74-019A	PB-239344
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<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
CIVIL AVIATION STUDIES AND INTERAGENCY COORDINATING ORGANIZATIONS, VOLUME II APPENDICES	550/9-74-019B	PB-239345
A LEGISLATIVE HISTORY OF THE NOISE CONTROL ACT OF 1972 Cong. Comm. Public Works (GPO 35-280)	550/9-74	GPO
NOISE FACTS DIGEST	550/9-74	PB-228345
CIVIL SUBSONIC TURBOJET ENGINE-POWERED AIRPLANES (RETROFIT AND FLEET NOISE LEVEL)	550/9-74	FAA

The FAA has been concerned with the noise levels of turbojet (axial flow jet and axial flow fan) powered airplanes that do not comply with FAR 36 since its promulgation in 1969. Two ANPRMs and one NPRM related to retrofitting operational airplanes to meet the noise levels specified in FAR 36 have been published for public comment. This report examines these three proposed actions in detail and recommends two regulations based upon their best features. The first regulation would be a straight retrofit rule. The second regulation would be a Fleet Noise Level (FNL) rule. The Analysis Section discusses technology options for source noise control including Quiet Nacelles, Refan, and miscellaneous other methods applicable now and in the future to all civil subsonic turbojet engine-powered airplanes. Included in the analysis are estimates of the noise levels and the unit and investment costs for the various retrofit options available to the large transport airplanes and to the smaller business jet airplanes as well. Also included in the Analysis, are discussions of the concepts of Fleet Noise Level (FNL), Day-Night Level (L_{dn}), and Noise Exposure Forecast (NEF) with numerical examples, which illustrate the pertinent relationships.

SOVIET NOISE RESEARCH LITERATURE FROM THE SCIENTIFIC RESEARCH INSTITUTE FOR HYGIENE, MOSCOW, USSR	550/9-74	PB-235086
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<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
A SCIENTIFIC BASIS FOR LIMITING NOISE EXPOSURE HEARING CONSERVATION	550/9-73-001A	AD-767274

A compilation of data is provided, with references to published work, which represents the present state of knowledge concerning the effects of continuous and impulsive noise on hearing. The danger to the ear of both occupational and non-occupational human exposure to noise is considered. Data are included or cited which enable quantitative predictions to be made of the risk to hearing in the American population due to noise exposure in any working or living context. Recommendations are made concerning the need to obtain more definitive data.

PREDICTION OF NIPTS DUE TO CONTINUOUS NOISE EXPOSURE	550/9-73-001B	AD-767205
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In support of the main document, "A Basis of Limiting Noise Exposure for Hearing Conservation", EPA Report 550/9-73-001A, this report compares the relationship of noise exposure of Noise Induced Permanent Threshold Shift (NIPTS) as predicted by the currently available works of Passchier-Vermeer, Robinson, Baughn and Kryter, and the yet unpublished work of the National Institute of Occupational Safety and Health. The works of Passchier-Vermeer, Robinson, and Baughn are selected since these are the only works that completely predict the relationship between NIPTS and noise exposure for various audiometric frequencies, sound pressure levels and population percentiles.

PUBLIC HEALTH AND WELFARE CRITERIA FOR NOISE	550/9-73-002	PB-241000
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The Noise Control Act of 1972 requires that the Administrator of the Environmental Protection Agency (EPA) develop and publish criteria with respect to noise. These criteria were to "reflect the scientific knowledge most useful in indicating the kind and extent of all identifiable effects of noise on the public health and welfare which may be expected from differing quantities and qualities of noise. This criteria document, therefore, served as a basis for the establishment of the recommended environmental noise level goals to be related to the "Levels Document" called for the Section 5(a)(2) of the Noise Control Act (refer to EPA report 550/9-74-004).

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
PROCEEDINGS OF THE INTERNATIONAL CONGRESS ON NOISE AS A PUBLIC HEALTH PROBLEM DUBROVNIK, YUGOSLAVIA	550/9-73-008	PB-241060

This report contains all of the papers presented at this conference which covered all areas of the health effects of noise including masking effects, noise induced hearing loss, nonauditory effects, performance, and behavior and community response, and sleep disturbance.

NOISE SOURCE REGULATION IN STATE AND LOCAL NOISE ORDINANCES	550/9-NTID-73.1	PB-245158
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This report provides a summary of noise source regulations encompassed in state laws and local ordinances prior to 1973. Data has been extracted from only those laws and ordinances stipulating specific decibel limits.

LEGAL AND INSTITUTIONAL ANALYSIS OF AIRCRAFT AND AIRPORT NOISE AND APPORTIONMENT OF AUTHORITY BETWEEN FEDERAL, STATE, AND LOCAL GOVERNMENTS	550/9-NTID-73.2	PB-225149
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The existing legal/institutional structure is described as it relates to the exposure of people to the noise of aircraft. Criteria for the evaluation of legal/institutional arrangements, whether existing or proposed, are then developed. Using these criteria, an evaluation of the existing legal/institutional system is provided in order to illuminate the major constraints and problem areas which exist. Potential alternatives are proposed and discussed as to their relative merits. Finally, recommendations are presented. Appended to this report are a list of the members of the task group (Appendix A), the formal recommendations submitted by member organizations (Appendix B), a list of the master file documents collected by the task group efforts (Appendix C), and related reports generated by the task force effort (Appendix D), including both the reports of other task groups and reports resulting from contracted studies.

IMPACT CHARACTERIZATION OF NOISE INCLUDING IMPLICATIONS OF IDENTIFYING AND ACHIEVING LEVELS OF CUMULATIVE NOISE EXPOSURE	NTID-73.4	PB-224408
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This report documents the work of an EPA task group on the study of implications of identifying and achieving levels of cumulative noise exposure around airports as mandated by Section 7 of the Noise Control Act of 1972.

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
REVIEW AND ANALYSIS OF PRESENT AND PLANNED FAA NOISE REGULATORY ACTIONS AND THEIR CONSEQUENCES REGARDING AIRCRAFT AND AIRPORT OPERATIONS	NTID-73.6	PB-224405
MILITARY AIRCRAFT AND AIRPORT NOISE AND OPPORTUNITIES FOR REDUCTION WITHOUT INHIBITION OF MILITARY MISSIONS	NTID-73.7	PB-223637
RELATION BETWEEN DAILY NOISE EXPOSURE AND HEARING LOSS BASED ON THE EVALUATION OF 6,835 INDUSTRIAL NOISE EXPOSURE CASES. (AMRL-TR-73-53)	73	AD-767204

This study was designed to display the percent of a population exhibiting greater than certain specified audiometric hearing levels as a function of specified exposure levels and duration of exposures to those levels. Audiometric data from 6,835 employees of an industrial plant were taken during the period from 1960 through 1965. The employees were selected only on the criterion that their noise exposures were reasonably well known. Hearing levels for each of three exposure conditions (78, 86, and 92 dBA) were obtained for the speech (0.5, 1, and 2 kHz) and the 4kHz audiometric frequencies. The data and hearing risk tables are presented.

REPORT ON AIRCRAFT-AIRPORT NOISE	550/9-73	PB-256388
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The Agency has conducted, for the Congress, a technological reassessment of the areas of concern stated in Section 7(a) of the Noise Control Act of 1972. This report provides a summary of the principal findings of the study and of the plans for regulatory proposals to satisfy the further continuing requirements of the Act, not only with reference to Section 7 but as they relate to the larger responsibilities of dealing with the problems of aviation and airport noise in accordance with other authorities of the Act.

REPORT TO THE PRESIDENT AND CONGRESS ON NOISE, FEBRUARY 1972	550/9-72	*
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<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
COMMUNITY NOISE	NTID-300.3	PB207124
<p>This 1971 report presented a basic physical and statistical description of the overall noise problem associated with outdoor noise in the community. Basic measures of noise and the way they vary over 24 hours are presented. Twenty four hour noise surveys were conducted at 18 locations ranging from wilderness to a downtown city. Annoyance and community reaction to noise were recorded. Correlation between physical measures of an intruding noise related factor and community reaction.</p>		
LAWS AND REGULATORY SCHEMES FOR NOISE ABATEMENT	NTID-300.4	PB-206719
EFFECTS OF NOISE ON WILDLIFE AND OTHER ANIMALS	NTID-300.5	PB-206720
<p>This report contained EPA's first review of the literature on wildlife. (See updated report: EPA 550/9-80-100)</p>		
AN ASSESSMENT OF NOISE CONCERNS IN OTHER NATIONS, VOLUME I	NTID-300.6	PB-206721
VOLUME II		PB-206722
EFFECTS OF NOISE ON PEOPLE	NTID-300.7	PB-208659
<p>This report summarizes the auditory effects and general psychological and sociological effects of noise based on noise effects research through 1970.</p>		
STATE AND MUNICIPAL NON-OCCUPATIONAL NOISE PROGRAMS	NTID-300.8	PB-208659
NOISE PROGRAMS OF PROFESSIONAL/INDUSTRIAL ORGANIZATIONS, UNIVERSITIES AND COLLEGES	NTID-300.9	PB-207125
SUMMARY OF NOISE PROGRAMS IN THE FEDERAL GOVERNMENT	NTID-300.10	
SOCIAL IMPACT OF NOISE	NTID-300.11	PB-206724
<p>This report describes kinds of problems encountered by a person with a hearing loss. Issues such as the sensor of isolation, diminished interest in participation in conversation, and emotional depression are described.</p>		

<u>TITLE</u>	<u>EPA NUMBER</u>	<u>NTIS PUBLICATION NO.</u>
EFFECTS OF SONIC BOOM AND SIMILAR IMPULSIVE NOISE ON STRUCTURES	NTID-300.12	PB-206725

A brief discussion is given of the physical nature of sonic booms, and other impulsive noises, and the parameters, such as over-pressure, duration, and mechanical impulse, which are used to characterize booms. This is followed by an overview of the response of structures--particularly buildings--to sonic booms and a review of the damage history observed due to supersonic overflights. The report concludes with a summary of the observed effects of impulsive noise on terrain and natural structures.

TRANSPORTATION NOISE AND NOISE FROM EQUIPMENT POWERED BY INTERNAL COMBUSTION ENGINES	NTID-300.13	PB-208660
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ECONOMIC IMPACT OF NOISE	NTID-300.14	PB-206726
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A study was undertaken to survey the economic impact of noise. Data available on the entire subject of noise and its abatement were so rudimentary that they do not lend themselves to even the most primitive economic analysis. It was demonstrated that the number of sources of noise in homes, in industry, on the highways, and in the air is growing at a dramatic rate. These noise sources are heterogeneous and transient, and, therefore, a universal solution for abatement of noise at the source was not available. From the economic viewpoint, it was demonstrated that substantial costs were associated with noise and its abatement.

FUNDAMENTALS OF NOISE MEASUREMENT, RATING SCHEMES AND STANDARDS	NTID-300.15	PB-206727
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This report can serve as an introduction to noise, including the inter-relationship between physical measures and psychological responses. The basic principles of sound generation and propagation are discussed as well as the measurement of both the physical attributes of noise and the effects of noise on people. The suitability and effectiveness of various noise exposure rating schemes, used to estimate or predict the effects of noise on man, are discussed and critiqued.

REPORT TO PRESIDENT AND CONGRESS ON NOISE		PB-206716
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