

TMSWC

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BACKGROUND

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NOISE EMISSION REGULATION FOR  
TRUCK-MOUNTED SOLID WASTE COMPACTORS (TMSWC)  
(Refuse Collection Vehicles (RCVs) or Garbage Trucks)  
(40 CFR PART 205)

Basis for the Regulation

In the Noise Control Act of 1972 (PL 92-574), Congress directed EPA to reduce the noise from major sources to levels that would protect the public health and welfare. EPA issued a regulation, effective January 1, 1978, that limits the noise emissions of medium and heavy truck chassis. In order to extend the benefits of reduced truck noise to persons adversely affected by the noise of certain special purpose vehicles, truck-mounted solid waste compactors were identified by EPA as a major source of noise on May 28, 1975 (40 FR 23105) under authority of Section 5(b)(1) of the Noise Control Act. A Notice of Proposed Rulemaking (NPRM) was published on August 25, 1977 (42 FR 43226). The final regulation discussed here is one in a continuing set of actions that represents EPA's compliance with the Congressional directive.

Problem Addressed

The noise levels of current refuse collection vehicles (RCV'S) range from 74 to 92 decibels. It is estimated that some 80 percent of these vehicles have noise levels in excess of 80 decibels. Approximately 10 percent of current newly-manufactured RCV's have some quieting features; the noise levels of these vehicles range from 74 to 85 decibels.

With over 80,000 refuse collection vehicles on our city streets, EPA estimates that more than 19 million persons are exposed to environmental noise, due in large part to compaction operations of these vehicles, in excess of a day-night average sound level ( $L_{dn}$ ) of 55 dB; that is, noise levels high enough to cause annoyance, interference with speech communications and other social activities, and sleep disturbances and awakening. This regulation is intended to reduce the noise of refuse compaction operations and the attendant health and welfare impact.

Summary of the Regulation

This regulation does not affect garbage trucks currently in use. Trash haulers do not have to replace their fleets with quiet trucks immediately. Rather, after October 1980 only quiet trucks will be available for sale. Thus, haulers do not have to do anything special to obtain quiet trucks, except be aware that the change will take place.

The regulation requires that the compactor body manufacturer design and manufacture the compactor body, and its associated equipment that interfaces with the truck chassis, in such a way that, when the body is properly installed on a chassis, the noise level of the complete refuse collection vehicle will

not exceed specified limits. The not-to-exceed noise levels are 79 decibels for refuse collection vehicles manufactured after October 1, 1980 and 76 decibels for vehicles manufactured after July 1, 1982. The noise levels are determined as the logarithmic (i.e., energy) average of the four readings of A-weighted sound pressure level measured at seven (7) meters (about 23 feet) from the front, sides, and rear of the vehicle respectively. The measurements are made at "slow" meter setting while the vehicle is stationary, empty and operating through its compacting cycle at the maximum engine speed allowable for compaction. While testing the compactor without waste materials is not typical of in-use operations, we have found this is the best means for obtaining repeatable test results.

Following the effective date of the regulation, newly-manufactured garbage trucks must be designed and manufactured to meet the appropriate standard for a period (Acoustical Assurance Period) of two (2) years, or 5,000 operating hours, whichever occurs first, after sale to the ultimate purchaser, provided the product is properly used and maintained.

#### Compliance with the Regulation

The compactor body manufacturer is responsible for the noise of the entire vehicle. The reasons for this assignment of responsibility are as follows:

- o The major factor that influences the amount of noise emitted by the refuse collection vehicle during compaction is the speed of the truck engine. The noise produced by the engine depends strongly on the engine's rotational speed; in addition, the gear noise of the power transmission mechanism also is influenced markedly by the engine speed.
- o The compactor body manufacturer has design control over the entire system, including selection of the key mechanical components such as hydraulic pump, power take-off unit (PTO) and other components that provide interfaces between the body and its machinery and the chassis. It is the selection of these key components and their performance characteristics (e.g., gear ratio of the PTO) that ultimately determines the operating speed of the engine during compaction, and, consequently, the noise emission of the vehicle.
- o A standard has already been established to control the noise produced by medium and heavy truck chassis. The noise standard for garbage trucks was set after taking into consideration the noise emitted from a regulated chassis.

Manufacturers are responsible for testing trucks of each configuration (as defined in the regulation), not each vehicle produced or each individual model. The test data is to be provided to EPA.

In addition, EPA will conduct Selective Enforcement Audit procedures that will allow for spot testing of vehicles from the assembly line.

Data collected by EPA shows that approximately 70 percent of solid waste compactor bodies are mounted onto the truck chassis by compactor body manufacturers and the remainder by the compactor body distributors. In those cases where the compactor body distributor mounts the body to a chassis, he is responsible for the total vehicle meeting the applicable standard. If a distributor wishes, he may rely on the body manufacturer's test results and avoid the cost of compliance testing. However, the distributor must follow the body manufacturer's assembly instructions, or the reliance is not valid and the distributor becomes responsible for all compliance requirements.

The concept of Acoustical Assurance Period (AAP) has been introduced to insure that manufacturers develop and apply durable sound reduction measures to their products, so that products will conform to the standard for a reasonable period of use. The AAP is not a warranty to the user, but a responsibility to the government. The regular product warranty to the user is a separate entity.

Truck purchasers or users, who find that their trucks do not meet the noise standard are protected first by the truck warranty and secondly by the Acoustical Assurance Period, which is a requirement the government places on the manufacturer. Any truck user whose truck is no longer under manufacturer's warranty, does not meet the noise standard, and has not been in operation for two (2) years or 5,000 hours, and who cannot obtain recourse from the manufacturer, should contact the Environmental Protection Agency. Users are prohibited from removing or tampering with the noise-control features of the vehicle, except in accordance with manufacturer maintenance or replacement provisions.

#### Benefits from the Regulation

The adverse affects of excessive exposure to noise in general range from feelings of annoyance to permanent hearing loss. Noise may also have adverse health effects similar to those caused by stress. Reduction of the noise of garbage trucks should reduce urban and residential noise levels and the long-term impact on people exposed to the noise, including the disruption of speech communication and sleep.

It is estimated that more than 19 million Americans are regularly affected by noise from garbage trucks. EPA estimates that this regulation should result in a 74 percent decrease in the severity and extent of annoyance and general adverse response to garbage truck noise by 1991 when the entire refuse collection vehicle fleet should be in compliance with the regulation. The regulation is also expected to result in a reduction of 75 to 80 percent in the occurrence of activity interfering events such as sleep disturbance and speech interference. This means that literally millions of people should be able to sleep without being awakened and to carry on normal activities such as conversation, reading and television viewing without annoying interruptions from the noise of refuse compaction.

#### Impacts of the Regulation

Before establishing the noise standard for garbage trucks, EPA studied the economic impact on the refuse collection industry and each American household. Although individual situations may vary, application of technology

to meet the regulatory standard and associated testing, reporting and record-keeping is expected to entail the following industry costs:

- o Increase in truck list price of ten (10) percent (some units have already been quieted at an incremental cost of about five (5) percent).
- o Equivalent annual costs to the industry of about \$21.5 million.

In most cases, these incurred costs can be passed through to the distributor and ultimately to users and consumers.

The cost of purchasing garbage trucks is less than five (5) percent of the cost of trash collection operations. Therefore, the cost of quieting garbage trucks should increase operating costs on the average by only one-half of one percent.

Where customers are charged a distinct fee for refuse collection, this increase in collection costs can be passed through to them. The average American household pays fees that range up to \$100 annually for trash collection. The noise regulation for garbage trucks should cause this annual charge to rise no more than 50 cents per household served.

In areas where refuse collection financing can not be directly passed through to consumers (for example, being paid for out of tax revenues), it is important to note that quiet trucks should also be more fuel efficient because they will operate at slower engine speeds. EPA estimates an annual savings of two (2) million gallons of gasoline and 1.2 million gallons of diesel fuel when the entire fleet is made up of quieted vehicles. Lower engine speeds should not decrease productivity. The use of currently available technology allows both lower noise levels and the maintenance of present trash compaction cycle times.

No significant economic impact is expected on the overall industry resulting from the foregoing costs. A slight decrease in demand may result, but it should be more than counterbalanced in terms of total industry revenue by the increased prices.

#### Employment

EPA studies indicate that employment should not change significantly due to the requirements of the regulation. Persons who might be affected by reductions of production due to the regulation amount to less than two (2) percent of the industry's employee population of 2900, or about 60 persons. However, an offsetting increase in employment is expected to occur due to the testing and compliance activity required by the regulation and the procurement of the necessary noise control components and materials.

#### Technology

Compliance with the standard can be accomplished by application of currently available technology. No specific technology is prescribed by EPA. However, one simple approach is to design the system to operate at reduced

engine speeds by proper selection of engine, speed controls, power take-offs (PTO), gear ratios and hydraulic pump capacity/size. Additional noise reduction can be achieved by use of a quieter PTO design such as a front-drive off the crankshaft

#### National Uniformity of Treatment

The Federal government is responsible to manufacturers and users of products used in interstate commerce for maintaining national uniformity of treatment. Because garbage trucks are used in interstate commerce, national uniformity of treatment simplifies some production problems for the manufacturer and reduces the costs to the user. Manufacturers will not be subject to a variety of differing state and local regulations; only to the uniform national noise standard for garbage trucks. This is a concept that is supported by the truck-mounted solid waste compactor industry as a whole.

#### The Cities' Garbage Truck Noise Problem

People living in the cities are more likely to be disturbed by garbage truck noise than those living in the suburbs or rural areas. This is because of the higher densities of population in urban areas, the longer amount of time that garbage trucks spend in front of each collection point, and the "canyon effect" of noise in urban streets.

Many cities have tried to alleviate the noise problem by imposing curfews on the collection of trash. In some cities this works well, and practically eliminates the sleep disturbances caused by nighttime trash collection. However, curfews may not be practical in cities with daytime traffic congestion, because of interference with traffic flow and resultant increases in collection costs (more collection vehicles and crews) due to inefficient operations.

Nevertheless, curfews are one tool that state and local governments can consider using in concert with Federal noise emission regulations to obtain relief from the noise of truck-mounted solid waste compactors. Their usefulness must, however, be evaluated on an individual basis by each area considering their application. There are other actions complementary to the Federal regulation that states and local governments can take to control noise from garbage collection. For example, they can prescribe appropriate noise limits for in-use vehicles. They can also require the use of plastic garbage containers and/or garbage bags in order to decrease the clatter caused by dropped cans. Also, garbage collectors can be made more mindful that their shouting can be disruptive to their sleeping customers. Some cities have gone as far as to change work rules to reduce the disturbances caused by noisy refuse collection employees.

Because of local or state noise ordinances, some cities already require quieted garbage trucks. Industry has responded to demands from these cities and has manufactured quiet trucks. Although local governments are preempted from setting different noise standards for new garbage trucks, those cities that purchase their own vehicles may solicit quieter vehicles through purchasing specifications.

### Public Participation in Development of the Regulation

This regulation has been developed after consideration of research on available quieting technology, potential health and welfare benefits, and the costs and economic effects of compliance. The regulatory decisions involved in the rule were based on technical data and other information gathered by EPA from meetings with compactor manufacturers, compactor distributors, refuse collection vehicle users, and state and local officials, and from published data and public comments.

The public comments were gathered throughout the regulatory development process and specifically solicited during a 90 day public comment period following the publication of the Notice of Proposed Rulemaking on August 26, 1977. The solicitation of public comments included notifying the public of the proposed regulation and comment period, accepting written comments to the public docket and holding two public hearings (one in New York, NY on October 8, 1977 and one in Salt Lake City, UT on October 20, 1977). The comments received were reviewed and considered during the development of the final regulation.

Petitions for review of actions of the Administrator of the Environmental Protection Agency in promulgating any standard or regulation under Section 6 of the Noise Control Act of 1972, as amended by the Quiet Communities Act of 1978, may be filed only in the United States Court of Appeals for the District of Columbia Circuit and shall be filed within ninety (90) days from the date of promulgation of the standard or regulation.

### Additional Information

Copies of the regulation and associated documents may be obtained from:

U.S. Environmental Protection Agency  
Public Information Center (PM-215)  
401 M Street, S.W.  
Washington, D.C. 20460  
(202) 755-0717

Questions related to specific aspects of the regulation (other than compliance and enforcement) may be directed to:

Director  
Standards and Regulations Division (ANR-490)  
U.S. Environmental Protection Agency  
Washington, D.C. 20460

or to:

Mr. Fred Mintz (703) 557-2710

Questions related to compliance and enforcement may be directed to:

Director  
Noise Enforcement Division (EN-387)  
U.S. Environmental Protection Agency  
Washington, D.C. 20460  
telephone (703) 557-7470