Recreation
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Portable Generator Noise Assessment

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Introduction

Recreation visitors to the national forests have complained about a variety of noises that interfere with their enjoyment of the natural sounds of the forest. Complaints have been received about noise from such man-made sources as portable generators, aircraft, highway traffic, trail bikes, chain saws, motor boats, radios, etc. These are generally thought to intrude upon natural quiet. Adequate noise standards and a well-defined test method suitable for field application are needed to regulate a number of these uses.

As part of a larger project to determine appropriate noise emission standards for campgrounds, the San Dimas Technology and Development Center (SDTDC) investigated portable generators—free standing or in recreation vehicles (RV's)—commonly used in forest campgrounds. The primary objectives of this investigation were to (1) document what, if any, generator noise standards exist, (2) determine if noise from portable generators is a national problem, and (3) provide Forest Service officers with information on equipment and procedures for managing generator noise in campgrounds.

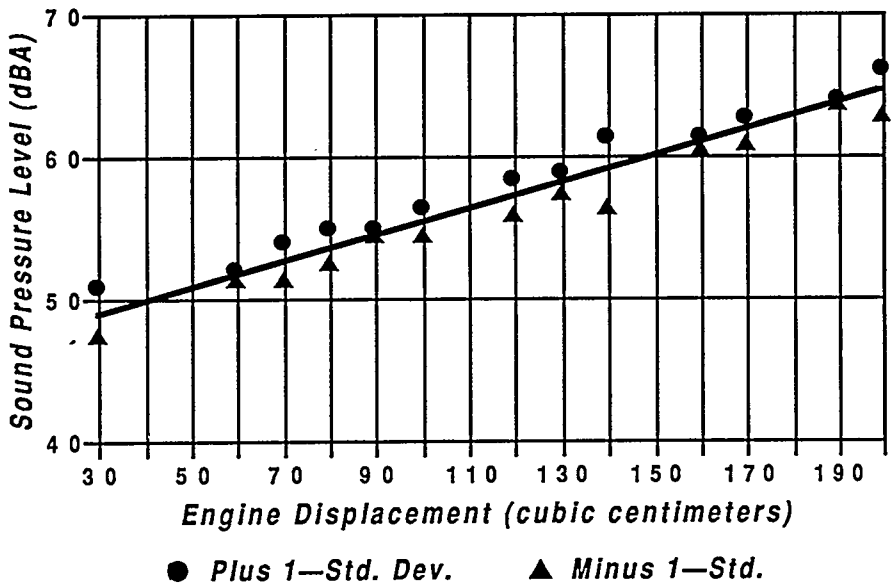

Figure 1.
Relationship between sound pressure level and engine displacement of portable generators weighing less than 100 lb.

Manufacturers' Standards

There are no U.S. noise emission standards that are binding on manufacturers of portable generators. The European Economic Community (ECC) has set product standards for generators which allow a maximum sound level roughly equivalent to 71 dBA at 50 feet for generators with "low" rated electrical output, and 73 dBA for generators with "high" rated outputs. These standards are lower than those in place a few years ago. Since generators are generally sold in a world market, most generators sold in the USA meet, or are lower than, these standards. Many of the generators produced have sound emissions well below the limits set in the ECC standards.

Figure 1 shows the relationship between engine size and sound emissions for portable generators, all weighing less than 100 pounds, that we investigated. This graph is based on product data from six major manufacturers

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of portable generators. Although sound levels generally increase with engine size, there is still a wide variation depending on generator design. Noise emissions from these generators range from 48 to 65 dBA at 50 feet with a mean of 59 dBA.

We also investigated generators weighing more than 100 pounds. These vary greatly in sound emissions (55 to 71 dBA at 50 feet), and their sound emissions are unrelated to engine size. The mean sound pressure level for these generators is 64.5 dBA.

Regulations

The National Park Service (NPS) was the only recreation agency we contacted that has an operational noise regulation based on field measurement of sound levels. Operation of generators, radios, etc. in a manner that exceeds a level of 60 dBA at 50 feet is prohibited. However, telephone interviews with NPS campground managers established that sound level meters are rarely, if ever, used to enforce sound regulations. The 60 dBA at 50 feet noise standard is enforced for special events (such as weddings, concerts, etc.), which the NPS allows only when a permit is issued. The noise regulation also prohibits noise that is unreasonable considering the location, time of day, impact on park users, etc.

Forest Service regulations in CFR 261.4(d) prohibit "causing public inconvenience, annoyance, or alarm by making unreasonably loud noise." Other park/recreation agencies use similarly worded regulations.

Manager's Survey

A sample of recreation managers from the Forest Service, NPS, Corps of Engineers, Tennessee Valley Authority, State of California, and private campground operators were contacted by telephone to determine what problems they have encountered with noise from generators and what, if any, measures they have taken to control such noise. The general consensus of the managers surveyed is that the newer portable generators are much quieter than the older models, and portable generator noise is no longer a major problem. Their principal concern is to provide a quiet atmosphere in campgrounds at night. The most common method used by the managers surveyed to achieve this was through education of campers in campground etiquette and the establishment of "quiet hours." These are generally between 2200 and 0600 hours, but may extend a couple hours on each side at specific sites. Enforcement is obtained through common sense application of a general prohibition of unreasonable noise.

The newer, quieter generators and the enforcement of "quiet hours" appears to satisfy most managers' needs. However, there are cases where managers wish to allow the quieter generators to operate later in the night while shutting down those that create excessive noise. This can create problems for the managers trying to explain to visitors why their neighbor is allowed to operate a generator while they cannot. In the absence of noise standards, some visitors do not want to accept the perception of the Ranger that their generator is excessively loud.

Conclusions

Generator noise in campgrounds is no longer a problem for most managers and thus is not a national issue. In most cases, the local manager is able to regulate generator use through education and the establishment of "quiet hours." These management techniques are preferable to a sound level standard, and no national noise standard for generators is proposed.

For those situations where a numerical standard for generators is desirable, a sound pressure level of 65 dBA measured at 50 feet is suggested. This would allow use of the small (less than 100 lb) generators and a majority of the larger generators that were part of this assessment. This level would exclude older, noisy generators and generators not well maintained.

Future Studies

SDTDC will conduct studies to develop methodology suitable for measuring recreational situation sound and then recommend appropriate sound pressure level regulations for adoption. We solicit your comments. Please contact the Center's Project Leader for Recreation Noise Studies, which is under the Aviation Program.

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