

**GUIDE TO APPLYING
FOR APPROVAL (AIR):
NOISE AND VIBRATION**

**NOVEMBER 1995
(REVISED APRIL 1998)**



**Ministry
of the
Environment**

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Guide to Applying for Approval (Air): Noise and Vibration

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Noise and vibration impacts of proposed equipment/facilities are considered in the course of assessing applications for Certificates of Approval (Air), in accordance with Section 9 of the Environmental Protection Act. The purpose of this Guide is to assist proponents in determining what information should be submitted when applying for Certificates of Approval (Air) for equipment/facilities that may produce noise or vibration impact. All applications for Certificates of Approval (Air) for equipment/facilities that produce noise and/or vibration must include the relevant Information Request Forms with the Mandatory Information. This Guide supplements the general information contained in

Guide for Applying for Approval (Air), Approvals Branch, Ministry of the Environment, November 1994

The following noise and vibration guidelines published by this Ministry contain additional technical information:

- NPC-205 Sound Level Limits for Stationary Sources in Class 1 & 2 Areas (Urban), October 1995*
- NPC-206 Sound Levels due to Road Traffic, October 1995*
- NPC-232 Sound Level Limits for Stationary Sources in Class 3 Areas (Rural), October 1995*
- NPC-233 Information to be Submitted for Approval of Stationary Sources of Sound, October 1995*
- NPC-207 Impulse Vibration in Residential Buildings (draft), November 1983*

PROCEDURE

Within the review of the application for Certificate of Approval (Air), the noise and vibration component is assessed separately from the air component. In order to expedite the approval process, applicants should follow the steps set out below:

- According to Section 1, identify the category of the equipment/facility;
- Complete the Information Request Form - Detailed, attached to this document, if the proposed equipment/facility falls within one of the two categories identified in Sections 1.(1) and 1.(2);
- Complete the Information Request Form - Simple, attached to this document, if the proposed equipment/facility does not fall within the two categories identified in Sections 1.(1) and 1.(2);
- The Information Request Form - Simple is the minimum requirement for all applications for Certificates of Approval (Air);
- For specifically identified equipment/facilities, e.g. diesel/gas generator sets and fans, complete and submit the separate Information Request Form, attached to this document;
- In cases of complex or multiple sources, submit the information in the form of a report, prepared by a qualified acoustical or vibration consultant. Consult Publication NPC-233 for details on the technical requirements.

In general, the assessment of noise and vibration impacts is performed at critical points of reception¹. Although the mandatory information is usually sufficient for the impact assessment, additional information may in some cases be required. As stated above, an acoustical report is required in cases of complex or multiple sources.

¹ "Point of reception" means any point on the premises of a person where sound or vibration originating from other than those premises is received.

For the purpose of verifying compliance with Section 9 of the Act, the point of reception may be located on any of the following existing or zoned for future use premises: permanent or seasonal residences, hotels/motels, nursing/retirement homes, rental residences, hospitals, camp grounds, and noise sensitive buildings such as schools and places of worship.

For equipment/facilities proposed on premises such as nursing/retirement homes, rental residences, hospitals, and schools, the point of reception may be located on the same premises.

1. CATEGORIZATION OF NOISE SOURCES

Equipment/facilities that produce noise and vibration are categorized by their potential to create adverse effects. Two groups of noise/vibration sources are identified: the first group includes equipment/facilities which may have a potential adverse effect on points of reception located within a 500 metre radius; the second group includes the most significant noise sources (equipment/facilities) which may have a potential adverse effect on points of reception located within a 1000 metre radius.

(1) Equipment/facilities with 500 metre Influence Radius

If the proposed equipment/facility is identified as, or closely resembles, one of the sources within the following list and any point of reception is within 500 metres of the proposed equipment/facility, the applicants must complete and submit the Information Request Form - Detailed, along with the application for a Certificate of Approval (Air):

Aggregate Handling Facilities	Grain Dryers
Air Conditioning Units (Industrial/Commercial)	Incinerators
Air Make-up Units	Landfill/Composting/Waste Reduction Facilities
Baghouses	Material Handling Facilities
Blow Moulding	Metal Working
Boilers	Paint Spray Booths
Burners	Pneumatic Equipment (used outdoors)
Car Washes	Pumps
Chillers	Ready-Mix Plants
Compressors	Refrigeration Equipment
Concrete Manufacturing/Processing	Sandblasting
Condensers	Scrubbers
Cooling Towers	Sewage Treatment Plants
Cyclones	Shredders
Dust Collectors	Soil/Groundwater Rehabilitation Systems
Electric Motors	Stamping and Forging Presses
Engines - Diesel/Natural Gas, Continuous & Standby (see forms in Section 2)	Transformers
Fans and Blowers (see forms in Section 2) (see also Fans and Blowers in Section 1.(2))	Tub Grinders/Wood Chippers/Debarking Drums
Foundries	Turbines (Steam)
Furnaces	Valves/Vents/Jets/Nozzles
Garbage Compactors	Water Treatment Plants
	Welding
	Woodworking

(2) Equipment/facilities with 1000 metre Influence Radius

If the proposed equipment/facility is identified as, or closely resembles, one of the sources within the following list and any point of reception is within 1000 metres of the proposed equipment/facility, the applicants must complete and submit the Information Request Form - Detailed, along with the application for a Certificate of Approval (Air):

Arc Furnaces	Fans and Blowers - all pressure blowers and large induced draft fans with flow rates in excess of 100,000 cfm or static pressures in excess of 5 inches water gauge (see forms in Section 2).
Asphalt Plants	Firearm Ranges
Blowdown Devices	Gas Turbines
Cogeneration Facility	Motor Vehicle Race Tracks
Crushing Operations Flares	
Flares	

2. INFORMATION REQUEST FORMS

Separate Information Request Forms have been prepared for equipment/facilities most frequently subject to noise and vibration impact assessment and are attached to this document.

INFORMATION REQUEST FORM - DETAILED**MANDATORY NOISE/VIBRATION INFORMATION FOR APPLICATIONS FOR CERTIFICATES OF APPROVAL (AIR)**

Please submit the following information if the proposed equipment/facility falls within the 500 metre and 1000 metre radius (from a point of reception¹) categories identified on page 2 of this form or in Sections 1.(1) and 1.(2) of the Guide to Applying for Approval (Air): Noise and Vibration. Please check off the boxes below to indicate that the information has been attached.

- (1) Relevant specifications of the proposed equipment/facility emitting noise and vibration including manufacturer's make and model number, power rating, flow rates, spectral noise emission data (if available), and all necessary supporting data.
- (2) Operating hours of the proposed equipment/facility (including start time and stop time) and sequence of operation of multiple and/or intermittent sources.
- (3) An up-to-date land use zoning designation plan, available from the Planning Department of the local municipality, complete with legend and scale, of the area surrounding and within a 500 metre or 1000 metre radius, depending on the source category, of the proposed equipment/facility. Mark clearly the location of the equipment/facility on the plan.
- (4) Scaled area location plan, available from the Planning Department of the local municipality, indicating the nature of the neighbourhood around the equipment/facility, within a 500 metre or 1000 metre radius including the location of adjacent buildings and structures, and the nearest point of reception¹. The location of the nearest point of reception¹, such as a residence, school or hospital, in relation to the proposed equipment/facility must be clearly shown on the plan.
- (5) Relevant architectural and mechanical drawings (scaled plans, elevations and sections) of the proposed equipment/facility. Drawings should show:
- size and location of all exterior openings in the building(s) housing the proposed equipment/facility;
 - details of the construction materials forming the exterior envelope of the building(s) (e.g. concrete block, brick, etc.);
 - details of the construction materials forming the interior surfaces of the building(s) (e.g. dry wall, concrete, etc.);
 - orientation of, and distance from, all exterior openings with respect to the nearest point of reception¹.
- (6) Details of all noise/vibration control equipment or measures recommended for the proposed equipment/facility including type, model no., manufacturer's name and acoustic performance specification data (e.g. spectral insertion loss values, spectral absorption coefficient values, etc.).

1 "Point of reception" means any point on the premises of a person where sound or vibration originating from other than those premises is received.

For the purpose of verifying compliance with Section 9 of the Act, the point of reception may be located on any of the following existing or zoned for future use premises: permanent or seasonal residences, hotels/motels, nursing/retirement homes, rental residences, hospitals, camp grounds, and noise sensitive buildings such as schools and places of worship.

For equipment/facilities proposed on premises such as nursing/retirement homes, rental residences, hospitals, and schools, the point of reception may be located on the same premises.

1. CATEGORIZATION OF NOISE SOURCES

Equipment/facilities that produce noise and vibration are categorized by their potential to create adverse effects. Two groups of noise/vibration sources are identified: the first group includes equipment/facilities which may have a potential adverse effect on points of reception located within a 500 metre radius; the second group includes the most significant noise sources (equipment/facilities) which may have a potential adverse effect on points of reception located within a 1000 metre radius.

(1) Equipment/facilities with 500 metre Influence Radius

If the proposed equipment/facility is identified as, or closely resembles, one of the sources within the following list and any point of reception is within 500 metres of the proposed equipment/facility, the applicants must complete and submit the Information Request Form - Detailed along with the application for a Certificate of Approval (Air):

Aggregate Handling Facilities	Grain Dryers
Air Conditioning Units (Industrial/Commercial)	Incinerators
Air Make-up Units	Landfill/Composting/Waste Reduction Facilities
Baghouses	Material Handling Facilities
Blow Moulding	Metal Working
Boilers	Paint Spray Booths
Burners	Pneumatic Equipment (used outdoors)
Car Washes	Pumps
Chillers	Ready-Mix Plants
Compressors	Refrigeration Equipment
Concrete Manufacturing/Processing	Sandblasting
Condensers	Scrubbers
Cooling Towers	Sewage Treatment Plants
Cyclones	Shredders
Dust Collectors	Soil/Groundwater Rehabilitation Systems
Electric Motors	Stamping and Forging Presses
Engines - Diesel/Natural Gas, Continuous & Standby (see forms in Section 2)	Transformers
Fans and Blowers (see forms in Section 2) (see also Fans and Blowers in Section 1.(2))	Tub Grinders/Wood Chippers/Debarking Drums
Foundries	Turbines (Steam)
Furnaces	Valves/Vents/Jets/Nozzles
Garbage Compactors	Water Treatment Plants
	Welding
	Woodworking

(2) Equipment/facilities with 1000 metre Influence Radius

If the proposed equipment/facility is identified as, or closely resembles, one of the sources within the following list and any point of reception is within 1000 metres of the proposed equipment/facility, the applicants must complete and submit the Information Request Form - Detailed along with the application for a Certificate of Approval (Air):

Arc Furnaces	Fans and Blowers - all pressure blowers and large induced draft fans with flow rates in excess of 100,000 cfm or static pressures in excess of 5 inches water gauge (see forms in Section 2).
Asphalt Plants	Firearm Ranges
Blowdown Devices	Gas Turbines
Cogeneration Facility	Motor Vehicle Race Tracks
Crushing Operations Flares	
Flares	

2. INFORMATION REQUEST FORMS

Separate Information Request Forms have been prepared for equipment/facilities most frequently subject to noise and vibration impact assessment.

(Rev. 4/98)

INFORMATION REQUEST FORM - SIMPLE**MANDATORY NOISE INFORMATION FOR APPLICATIONS FOR CERTIFICATES OF APPROVAL (AIR)**

Please submit the following information if the proposed equipment/facility does not fall within the 500 metre and 1000 metre radius (from a point of reception¹) categories identified on page 2 of this form or in Sections 1.(1) and 1.(2) of the Guide to Applying for Approval (Air): Noise and Vibration. Please check off the boxes below to indicate that the information has been attached.

- (1) An up-to-date land use zoning designation plan, available from the Planning Department of the local municipality, complete with legend and scale, of the area surrounding and within a 500 metre or 1000 metre radius, depending on the source category, of the proposed equipment/facility. Mark clearly the location of the equipment/facility on the plan.
- (2) Scaled area location plan, available from the Planning Department of the local municipality, indicating the nature of the neighbourhood around the equipment/facility, within a 500 metre or 1000 m radius including the location of adjacent buildings and structures, and the nearest point of reception¹. The location of the nearest point of reception¹, such as a residence, school or hospital, in relation to the proposed equipment/facility must be clearly shown on the plan.

1 "Point of reception" means any point on the premises of a person where sound or vibration originating from other than those premises is received.

For the purpose of verifying compliance with Section 9 of the Act, the point of reception may be located on any of the following existing or zoned for future use premises: permanent or seasonal residences, hotels/motels, nursing/retirement homes, rental residences, hospitals, camp grounds, and noise sensitive buildings such as schools and places of worship.

For equipment/facilities proposed on premises such as nursing/retirement homes, rental residences, hospitals, and schools, the point of reception may be located on the same premises.

1. CATEGORIZATION OF NOISE SOURCES

Equipment/facilities that produce noise and vibration are categorized by their potential to create adverse effects. Two groups of noise/vibration sources are identified: the first group includes equipment/facilities which may have a potential adverse effect on points of reception located within a 500 metre radius; the second group includes the most significant noise sources (equipment/facilities) which may have a potential adverse effect on points of reception located within a 1000 metre radius.

(1) Equipment/facilities with 500 metre Influence Radius

If the proposed equipment/facility is identified as, or closely resembles, one of the sources within the following list and any point of reception is within 500 metres of the proposed equipment/facility, the applicants must complete and submit the Information Request Form - Detailed along with the application for a Certificate of Approval (Air):

Aggregate Handling Facilities	Grain Dryers
Air Conditioning Units (Industrial/Commercial)	Incinerators
Air Make-up Units	Landfill/Composting/Waste Reduction Facilities
Baghouses	Material Handling Facilities
Blow Moulding	Metal Working
Boilers	Paint Spray Booths
Burners	Pneumatic Equipment (used outdoors)
Car Washes	Pumps
Chillers	Ready-Mix Plants
Compressors	Refrigeration Equipment
Concrete Manufacturing/Processing	Sandblasting
Condensers	Scrubbers
Cooling Towers	Sewage Treatment Plants
Cyclones	Shredders
Dust Collectors	Soil/Groundwater Rehabilitation Systems
Electric Motors	Stamping and Forging Presses
Engines - Diesel/Natural Gas, Continuous & Standby (see forms in Section 2)	Transformers
Fans and Blowers (see forms in Section 2) (see also Fans and Blowers in Section 1.(2))	Tub Grinders/Wood Chippers/Debarking Drums
Foundries	Turbines (Steam)
Furnaces	Valves/Vents/Jets/Nozzles
Garbage Compactors	Water Treatment Plants
	Welding
	Woodworking

(2) Equipment/facilities with 1000 metre Influence Radius

If the proposed equipment/facility is identified as, or closely resembles, one of the sources within the following list and any point of reception is within 1000 metres of the proposed equipment/facility, the applicants must complete and submit the Information Request Form - Detailed along with the application for a Certificate of Approval (Air):

Arc Furnaces	Fans and Blowers - all pressure blowers and large induced draft fans with flow rates in excess of 100,000 cfm or static pressures in excess of 5 inches water gauge (see forms in Section 2).
Asphalt Plants	Firearm Ranges
Blowdown Devices	Gas Turbines
Cogeneration Facility	Motor Vehicle Race Tracks
Crushing Operations Flares	
Flares	

2. INFORMATION REQUEST FORMS

Separate Information Request Forms have been prepared for equipment/facilities most frequently subject to noise and vibration impact assessment.

(Rev. 4/98)

INFORMATION REQUEST FORM - DIESEL/GAS GENERATOR SETS**MANDATORY NOISE INFORMATION FOR APPLICATIONS FOR CERTIFICATES OF APPROVAL (AIR)**

Please submit the following information if any existing residential receptors, or any other points of reception¹ such as schools, hospitals, etc., or any residentially zoned lands, are within a 500 metre radius of the proposed equipment/facility. Please check off the boxes below to indicate that the information has been attached.

- (1) Generator-set power rating, model no., manufacturer, spectral noise emission data (if available).
- (2) An up-to-date land use zoning designation plan, available from the Planning Department of the local municipality, complete with legend and scale, of the area surrounding and within a 500 metre radius of the proposed equipment/facility. Mark clearly the location of the equipment/facility on the plan.
- (3) Scaled area location plan, available from the Planning Department of the local municipality, indicating the nature of the neighbourhood around the equipment/facility, within a 500 metre radius including the location of adjacent buildings and structures, and the nearest point of reception¹. The location of the nearest point of reception¹, such as a residence, school or hospital, in relation to the proposed equipment/facility must be clearly shown on the plan.
- (4) Scaled architectural and mechanical drawings (plans, elevations and sections) of the proposed equipment/facility installation. Drawings must show:
- size and location of all exterior openings in the mechanical room housing the diesel/gas generator-set, particularly the cooling air intake and exhaust openings;
 - diesel/gas generator-set layout in the mechanical room, including all the associated equipment such as ventilation ducts, dampers, exhaust piping path to outlet, etc.;
 - details of the construction materials forming the exterior envelope of the building (e.g. concrete block, brick, etc.);
 - details of the construction materials forming the interior surfaces of the building(s) (e.g. dry wall, concrete, etc.);
 - orientation of, and distance from, all exterior openings with respect to the nearest point of reception¹; the nearest point of reception may be an operable window in a living area of a residence located on the same premises as the unit (generator set).
- (5) Details of all noise/vibration control equipment or measures recommended for the proposed generator set such as mufflers, silencers, acoustic louvres, enclosures and absorptive treatment, including type, model number, manufacturer and acoustic specification data (e.g. spectral insertion loss values, spectral absorption coefficient values, etc.).

1 "Point of reception" means any point on the premises of a person where sound or vibration originating from other than those premises is received.

For the purpose of verifying compliance with Section 9 of the Act, the point of reception may be located on any of the following existing or zoned for future use premises: permanent or seasonal residences, hotels/motels, nursing/retirement homes, rental residences, hospitals, camp grounds, and noise sensitive buildings such as schools and places of worship.

For equipment/facilities proposed on premises such as nursing/retirement homes, rental residences, hospitals, and schools, the point of reception may be located on the same premises.

INFORMATION REQUEST FORM - FANS/AIR MOVING DEVICES**MANDATORY NOISE INFORMATION FOR APPLICATIONS FOR CERTIFICATES OF APPROVAL (AIR)**

Please submit the following information if any existing residential receptors, or any other points of reception¹ such as schools, hospitals, etc., or any residentially zoned lands, are within a 500 metre or 1000 metre radius of the proposed equipment/facility². Please check off the boxes below to indicate that the information has been attached.

- (1) At least one of the following must be provided:
- spectral noise emission data from the manufacturer;
 - relevant specifications of the proposed equipment/facility - complete the Fan Information Table on the back of this page.
- (2) Operating hours of the proposed equipment/facility (including start time and stop time) and sequence of operation of multiple and/or intermittent sources.
- (3) An up-to-date land use zoning designation plan, available from the Planning Department of the local municipality, complete with legend and scale, of the area surrounding and within a 500 metre or 1000 metre radius of the proposed equipment/facility. Mark clearly the location of the equipment/facility on the plan.
- (4) Scaled area location plan, available from the Planning Department of the local municipality, indicating the nature of the neighbourhood around the equipment/facility, within a 500 metre or 1000 metre radius including the location of adjacent buildings and structures, and the nearest point of reception¹. The location of the nearest point of reception¹, such as a residence, school or hospital, in relation to the proposed equipment/facility must be clearly shown on the plan.
- (5) Drawings of fan installation layout showing open intake and exhaust orientation relative to the nearest point of reception¹.
- (6) Details of all noise/vibration control equipment or measures recommended for the proposed equipment/facility including type, model number, manufacturer's name and acoustic performance specification data (e.g. spectral insertion loss values, spectral absorption coefficient values, etc.).

1 "Point of reception" means any point on the premises of a person where sound or vibration originating from other than those premises is received.

For the purpose of verifying compliance with Section 9 of the Act, the point of reception may be located on any of the following existing or zoned for future use premises: permanent or seasonal residences, hotels/motels, nursing/retirement homes, rental residences, hospitals, camp grounds, and noise sensitive buildings such as schools and places of worship.

For equipment/facilities proposed on premises such as nursing/retirement homes, rental residences, hospitals, and schools, the point of reception may be located on the same premises.

2 1000 metre is for all pressure blowers and large induced draft fans with flow rates in excess of 100,000 cfm or static pressure in excess of 5 inches water gauge.

FAN INFORMATION TABLE

FAN TYPE	FAN DIAM. (inches)	NUMBER OF BLADES	MOTOR RATING (horsepower)	FAN RPM (Rev per minute)	FLOW RATE (Cubic feet per minute)	STATIC PRESSURE (Inches Water Gauge)	PEAK STATIC EFFICIENCY (%)	NOTES ON FAN DUTY CYCLE
CENTRIFUGAL AIRFOIL, BACKWARD CURVED								
CENTRIFUGAL FORWARD CURVED								
CENTRIFUGAL RADIAL, FORWARD CURVED								
CENTRIFUGAL RADIAL, PRESSURE BLOWER								
ROTARY POSITIVE DISPLACEMENT BLOWER								
VANEAXIAL								
TUBEAXIAL								
PROPELLER								

Fan Manufacturer's Name: _____

Fan Manufacturer's Model No.: _____

Fan Manufacturer's Serial No.: _____

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