

### Background

In Ontario, it is against the law to discharge a contaminant into the natural environment unless a permit to do so (known as a Certificate of Approval) has been issued by the Ministry of the Environment. The factors involved to obtain a CoA are covered by Regulation, and the Regulations can change from time to time. The current Regulation, No. 419, was issued in 2005 and is referred to as O-Reg. 419/05.

### Summary of items covered by O-Reg419/05

The Regulation lists several hundred potential contaminants and indicates their maximum allowed concentrations. Because it is not feasible to physically measure the concentrations, the regulation indicates acceptable methods for determining the values, by a procedure known as “dispersion modeling”. Dispersion models are software programs that mathematically model the way in which contaminants being discharged from a building disperse into the air around the building and so can be used to determine the concentrations of contaminants at given points – provided the rate at which the contaminants being emitted from the building are known. All the technical data relating to the submission of an application have to be presented in what is known as an Emission Summary and Dispersion Modeling (ESDM) Report

Some of the other items covered by O-Reg419/05 include:

- A list of permitted dispersion modelling software
- The dates by which obsolete software must be phased out (phase out date depends upon the type of industry involved).
- Dates when different limits for the point of impingement and maximum ground level concentrations become effective

O-Reg419/05 also indicates the format which must be followed in submitting an application for a CoA, for example: there must be a source summary table, which indicates the different products that are being emitted and at what rate, and a stack summary table, which gives the parameters of the different stacks (flow rates, diameters, temperatures and heights) and indicates what material(s) are being submitted through each one.

### Procedures involved in preparing an ESDM report

#### Emission factors

The most crucial factor involved in preparing an ESDM report is determining the dispersion factors for the different contaminants. There are several ways in which this can be done, of which the favoured is mass balance, because usually it is the most exact. In principal mass balance is carried out by obtaining data for the weight of contaminant before processing, and the weight of the contaminant in the finished product. The difference is the amount that was emitted



## CERTIFICATE OF APPROVAL (CoA) FOR AIR EMISSIONS

to the atmosphere. Although it is usually straight forward to find the amount of contaminant being input into the process, it is often very difficult to determine a sufficiently accurate estimate for the amount leaving in finished product. This means that alternative methods for obtaining emission factors must be used, such as factors published by the industry involved or by organizations such as the US Environmental Protection Agency. One of the strengths of SPECTRUM ENVIRONMENTAL is our ability to develop appropriate procedures for determining emission factors, and we have often done this on-site. Reliable values for emission factors means that there is no need to assume very conservative (high) values for the emissions, which in turn means that the calculated ground level and point of impingement concentrations are likely to be below the emission limits set by the MoE.

### Site sketches and zoning maps

A sketch, drawn to scale of the property, indicating the location of property lines must be included in the ESDM, together with maps indicating the zoning of the area surrounding the property. A scaled drawing of the building roof, indicating location of emission stacks is also required.

### Noise assessment

The Certificate of Approval covers both air emissions and noise. A noise assessment must be performed. This is a point score that takes into account building size, location (rural or urban) and distance from major highways, equipment used (compressors, blowers) and distance from the nearest sensitive receptor, which can be a residential building, or a hotel or hospital. If the point score exceeds a certain value, then the Ministry requires that noise measurements be undertaken or that acoustic calculations show that the noise levels at receptor sites are below specified levels.

### Completing the CoA application

Several forms have to be filled in as part of the application process, and SPECTRUM ENVIRONMENTAL undertakes this requirement, including the MoE fee assessment form on behalf of the client. A copy of proof of ownership of the property must be attached to the application.

### Further information

You are invited to contact SPECTRUM ENVIRONMENTAL if you have any queries concerning your plant's requirements for a Certificate of Approval, either for a complete approval or an amendment to an existing Certificate.