



Colorado Department  
of Public Health  
and Environment

# Air Quality Impact Analysis Checklist for New Minor Sources and Minor Modifications

March 8, 2002 (revised 09/19/08)

Air Pollution Control Division / Technical Services Program

This checklist is intended to help determine what type of “impact analysis” is warranted, based on procedures in the [Colorado Modeling Guideline](#) (*guideline*). It applies to permits subject to Regulation No. 3 Part. B, §III.B.5.d ([100103aqccstationarysourcepermitting.pdf](#)) and to general permits that have an “impact analysis” requirement. It applies to sources emitting particulate matter, carbon monoxide, lead, sulfur dioxide, or nitrogen oxides. Sources emitting only volatile organic compounds (VOCs) should disregard this form.

1.	<input type="checkbox"/> <b>Submit a complete <i>Air Pollutant Emission Notice (APEN)</i> form</b> and all other required forms. APEN forms are available at: <a href="http://www.cdphe.state.co.us/ap/stationary.html">http://www.cdphe.state.co.us/ap/stationary.html</a>
2.	<input type="checkbox"/> <b>Submit the information in section 7.4 of the guideline</b> or submit a complete Air Quality Modeling Form ( <a href="http://colorado.gov/airquality/permits/AQImpactForm1.pdf">http://colorado.gov/airquality/permits/AQImpactForm1.pdf</a> ). Use this information in Step 6.
3.	<input type="checkbox"/> <b>Submit a facility plot plan</b> drawn to scale (with north arrow) showing property lines, fences, <sup>1</sup> emissions points/areas, buildings, structures (e.g., equipment housing). Include a geo-reference point (e.g., coordinate and datum) plus source ID numbers that match APEN/inventory ID numbers.
4.	<input type="checkbox"/> <b>Submit a map showing the location of the facility.</b> [Note: U.S. Geological Survey (USGS) <a href="#">7.5 minute topographic maps</a> (e.g., <a href="#">DRGs</a> ) are preferred since they show the topography of the area.]
5.	<input type="checkbox"/> <b>Determine if there are sources within 5 kilometers that emit the same pollutant.</b>
6.	<input type="checkbox"/> <b>Determine if modeling is warranted</b> using the information from steps 1-5 and additional information as necessary. Review section 2 and Table 1 (page 12) of the <i>guideline</i> ( <a href="http://colorado.gov/airquality/permits/guide.pdf">http://colorado.gov/airquality/permits/guide.pdf</a> ) Explain the decision process.  <input type="checkbox"/> If the requested emission rate(s) is equal to or greater than the thresholds in Table 1, modeling is usually warranted. If it is less, modeling is not usually warranted unless a circumstance exists (see Table 1 footnotes) that makes it reasonable to believe the source could cause or contribute to a violation of ambient air quality standards. If there is doubt, consult with the Division.  <input type="checkbox"/> Determine if there is a localized nearby area of “poor existing air quality” that may trigger modeling at levels below the thresholds in Table 1. For example, a key indicator of poor air quality is the presence of one or more sources within 5 km that emit the same pollutant and cause a significant concentration gradient (individually or collectively).

<sup>1</sup> Fences and/or physical barriers may be used to exclude property owned or controlled by the source operator from “ambient air.” Ambient air quality standards only apply in “ambient air.” For example, receptors (geographic locations at which the model calculates the source’s impact) may be omitted from the property of the facility under review, provided it is inaccessible to the general public. Refer to the definition of **ambient air** in the glossary of the *guideline*. If there is not a physical barrier (e.g., fence, wall), receptors should be located on the property of the applicant. Division approval is necessary if the applicant wants to use a physical barrier such as a canyon, river, tailings pile, or other physical features as the ambient air boundary.

7.  If modeling is warranted, applicants for “general permits” should submit a modeling analysis with the permit application. Applicants for conventional “construction permits” should **consider the pros and cons of submitting modeling along with the permit application.**<sup>2</sup>

**If modeling is performed:**

8.  Follow the *guideline* ([guide.pdf](#)) modeling recommendations.
9.  If screening-level modeling is being conducted, refer to the Division’s screening guidance: <http://www.colorado.gov/airquality/permits/screen.pdf>. If there are buildings or structures (e.g., equipment housing) nearby, account for **building downwash in the modeling**. If the stack height ( $H_s$ ) is equal to or greater than the sum of the building height ( $H_b$ ) and 1.5 times the lesser of either the height or width of the structure ( $1.5L_b$ ), building downwash usually may be omitted in the modeling ( $H_s \geq H_b + 1.5L_b$ ).<sup>3</sup>
10.  **Determine if the impact is “significant.”** If the impact from the new source or modification does not exceed the modeling significance levels in Table 3 on page 15 of the *guideline*, the impact is not “significant” and additional air quality analysis is not warranted. Go to step 14. If the impact is significant, a full impact analysis is warranted. Go to step 11.
11.  **If the impact is significant, perform a full impact analysis** to determine if the action will comply with ambient air quality standards (Table 5 on page 20 of the *guideline*): “full impact” = “source impact” + “background concentration (see step 12)” + “nearby source impact (see step 13)”
12.  If the impact is significant, **Add a “background concentration”** to the modeled impacts that accounts for other sources not modeled. To obtain a background concentration, contact Nancy Chick at [nancy.chick@state.co.us](mailto:nancy.chick@state.co.us). For more, see section 4.1 on page 18 of the *guideline*.
13.  If the impact is significant, **obtain a “standard modeling emission inventory” from the Division for sources within 5km of the significant impact radius** (<http://www.cdphe.state.co.us/ap/i-n-s.html#datareq>) or otherwise determine if there are any nearby sources. Use the inventory to determine if there are “nearby” stationary sources that cause significant concentration gradients (i.e., “nearby source impact”) that are not accounted for by the “background concentration.” If so, estimate the impacts from nearby sources with a model and/or contact the Division for additional guidance.
14.  **Provide the model input and output files** on diskette, CD, or by other electronic means. Only output files are necessary for screening-level models.
15.  **Provide a concise report** that explains assumptions and results.

<sup>2</sup> Minor sources and minor modifications are not required by regulation to submit modeling with the permit application. However, a general permit may require that the applicant submit an “impact analysis” with the application. Unless an impact analysis is required by a general permit, applicants may elect to submit modeling with the application to prevent unnecessary delays. If modeling is not submitted with the application, the Division will decide if it is warranted. If it is, the Division will perform a screening-level analysis if it is technically feasible to perform one. If there is a problem, the Division will contact the applicant to discuss options. If refined-level modeling is necessary, the Division will typically request that it be done by the applicant.

<sup>3</sup> "Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised." EPA-454/R-92-019.

## Flowchart of a Screening-Level Impact Analysis

