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WRAP DEFINITIONS OF DUST

October 21, 2004

PURPOSE

The purpose of these definitions is to provide clarity and consistency when using the terms dust, fugitive dust, anthropogenic dust, and natural dust in the context of the federal regional haze rule. The distinction between anthropogenic and natural dust is made to:

- Clarify how the WRAP defines dust, its sources, and causes;
- Provide an operational definition for use in observational- and emissions-based source apportionment techniques; and
- Identify and prioritize sources of dust that are most appropriate to control for purposes of improving visibility in Class I areas.

Natural and anthropogenic dust will often be indistinguishable and may occur simultaneously. For example, natural, barren areas will naturally emit some dust during high wind events, but will emit more when the surface is disturbed by human activities. Hence, the dust from a disturbed, naturally-barren area on a given day could be part “natural” and part “anthropogenic.”

These definitions are not intended for use in refining the EPA’s estimates of natural visibility conditions, although they may be useful for that purpose. These definitions may also be used with regard to dust emanating from outside the U.S. – that is, dust from other countries can be either natural and/or anthropogenic.

DEFINITION OF DUST

Dust is particulate matter which is or can be suspended into the atmosphere as a result of mechanical, explosive, or wind-blown suspension of geologic, organic, synthetic, or dissolved solids. Dust does not include non-geologic particulate matter emitted directly by internal and external combustion processes.

DEFINITION OF FUGITIVE DUST

Fugitive dust is dust which could not reasonably pass through a stack, chimney, vent, or other functionally equivalent opening.

ANTHROPOGENIC AND NATURAL DUST

Examples of anthropogenic and natural dust are provided below. Any mitigation of dust for regional haze control would likely be focused on those anthropogenic sources which are most likely to contribute to visibility impairment in Class I areas and which are technically feasible and cost-effective to control. Sources that are already controlled or partially controlled may be technically infeasible or not cost-effective to control further. Anthropogenic emissions do not include any emissions which would occur if the surface were not disturbed or altered beyond a natural range. Such emissions should be subtracted, if practicable, from the total dust emissions to determine the precise anthropogenic emission quantity.

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	Anthropogenic Dust	Natural Dust
Mechanical	<p>Mechanically- and explosively-suspended solids and dissolved solids from activities including but not limited to:</p> <ul style="list-style-type: none"> • Agriculture • Construction, mining, and demolition • Material handling, processing, and transport • Vehicular movement on paved and unpaved surfaces • Animal movement on surfaces which have been disturbed or altered by humans beyond a natural range • Animal movement on undisturbed or unaltered surfaces by a number of animals which is greater than native populations • Cooling towers 	<ul style="list-style-type: none"> • Movement of a number of indigenous animals on surfaces which have not been disturbed or altered by humans beyond a natural range • Natural landslides, rockslides, and avalanches • Solids and dissolved solids emitted by volcanoes, geysers, waterfalls, rapids, and other types of splashing • Extraterrestrial material and impacts
Windblown	<p>Solids and dissolved solids entrained by wind passing over surfaces which have been disturbed or altered by humans beyond a natural range. Such surfaces may include, but are not limited to:</p> <ul style="list-style-type: none"> • Undeveloped lands • Construction and mining sites • Material storage piles, landfills, and vacant lots • Agricultural crop, range, and forest lands • Roadways and parking lots • Artificially-exposed beds of natural lakes and rivers • Exposed beds of artificial water bodies • Areas burned by anthropogenic fires (as defined by the WRAP Policy for Categorizing Fire Emissions) which have yet to be revegetated or stabilized 	<p>Solids and dissolved solids entrained by wind passing over surfaces which have not been disturbed or altered by humans beyond a natural range. Such surfaces may include, but are not limited to:</p> <ul style="list-style-type: none"> • Naturally-dry river and lake beds • Barren lands, sand dunes, and exposed rock • Natural water bodies (e.g., sea spray) • Non-agricultural grass, range, and forest lands • Areas burned by natural fires (as defined by the WRAP Policy for Categorizing Fire Emissions) which have yet to be revegetated or stabilized
	<p>Wind-blown particulate matter from sources created by natural events over 12 months ago, similar to EPA’s natural events policy</p>	

Note: Anthropogenic emissions are only that portion of the total emissions which occur in excess of what would occur naturally. Wherever practical, natural emissions should be estimated and subtracted from total emissions to determine a more precise anthropogenic quantity.

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Examples of Anthropogenic and Natural Emissions Under A Draft Definition of Dust

