

Black Carbon

Black carbon (BC, also referred to as black soot, black carbon aerosols, black carbon particles) refers to a solid particle emitted during incomplete combustion. All particle emissions from a combustion source are broadly referred to as particulate matter (PM) and usually delineated by sizes less than 10 micrometers (PM₁₀) or less than 2.5 micrometers (PM_{2.5}). Black carbon is the solid fraction of PM_{2.5} that strongly absorbs light and converts that energy to heat. When emitted into the atmosphere and deposited on ice or snow, black carbon causes global temperature change, melting of snow and ice, and changes in precipitation patterns. Roughly half of atmospheric BC comes from fossil fuel combustion, and the other half from biomass and biofuel burning. While BC is short-lived in the atmosphere (1-4 weeks), it is linked to strong regional climate effects and a large share (~30%) of recently observed warming in the Arctic.

The level of BC from any given source will vary – the higher the BC content of a sooty emission, the darker and therefore more warming the impact (i.e. the ratio of organic carbon [OC] to BC is low or, conversely, the BC to OC ratio is high). Fossil fuel and biofuel emissions contain a lower OC to BC ratio, and are therefore high priority areas for BC reduction. The transport sector, because of its low OC to BC ratio, is one of the most promising and cost-effective areas of intervention.

More information on black carbon is available from the International Council on Clean Transportation (the ICCT) through the recently-published policy-relevant summary of black carbon climate science and appropriate emission control strategies, available from <http://www.theicct.org/> and [here](#).