

Non-CO₂ Greenhouse Gases: Black Carbon

Source/Sectors: Stationary Sources

Technology: Options to reduce black carbon emission from stationary sources (D.2)

Description of the Technology:

Biomass burning accounts for approximately 25% of BC emissions in the United States. Biomass burning is a difficult source to control; however, from a global warming mitigation perspective, it may be less important because OC is more dominant in terms of emissions and negative forcing (DeAngelo, 2006). Most PM emission control measures on utility and non-electric generating utilities (non-EGU) point sources are add-on technologies. These technologies include fabric filters (bag houses), electric static precipitators (ESPs), and wet scrubbers (USEPA, 2006). Specific technological options to reduce BC emissions from stationary sources include the following:

- Mitigation measures for diesels – If diesel engines are used in the stationary sources, then the measures discussed in Section 5.1 may be applicable. For example, applying diesel particulate filters to diesel-fueled compression-ignition engines can achieve up to 90% reduction in fine particulate matter (USEPA, 2006). Other measures such as engine modification, alternative fuels, reducing idle time, and proper maintenance should also reduce BC emissions.
- PM control measures for area sources – Specific controls exist for stationary area sources, including catalytic oxidizers on conveyORIZED char-broilers at restaurants that can reduce PM emissions by 80% (USEPA, 2006). Another example is to replace older woodstoves with those in compliance with the New Source Performance Standard (NSPS) for residential wood combustion (USEPA, 2006).
- Apply the end-of pipe control on utility and non-energy generating utilities (non-EGU) point sources – Use ESPs, bag houses, or wet scrubbers for particulate removal. Upgrade the existing systems to better remove finer particles may be needed: one example is to add more collector plates in an ESP system to increase its removal efficiency (USEPA, 2006).
- Alternatives to open biomass burning – Available options to reduce open biomass burning include changing the frequency and conditions of prescribed burning and reducing open waste burning (US Climate Change, 2005).

Effectiveness: Varies

Implementability: Varies

Reliability: Varies

Maturity: Varies

Environmental Benefits: Black carbon emission reduction

Cost Effectiveness: Varies

Industry Acceptance Level: Varies

Limitations: Varies

Sources of Information:

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13. U.S. Environmental Protection Agency (2006) "Regulatory Impact Analyses - 2006 National Ambient Air Quality Standards for Particle Pollution", United States Environmental Protection Agency, October 6, 2006.