



## CLEANUP – CLEAN AIR

### DIESEL EMISSIONS & GREENHOUSE GAS REDUCTIONS

# Clean Diesel Technologies & Alternative Fuels

The goal of Cleanup – Clean Air is to encourage, facilitate, and support diesel emissions and greenhouse gas reductions technologies and practices at Superfund cleanup and redevelopment sites.

### How Can Superfund Reduce Diesel Pollution?

**RETROFIT** engines with diesel emission control technologies  
**MAINTAIN** in accordance with engine manual (i.e., change air filters, check engine timing, fuel injectors and pumps) and keep engines well tuned

**REFUEL** with biodiesel, other alternative fuels, or with cleaner fuels such as ultra-low-sulfur diesel (ULSD)

**MODIFY OPERATIONS** by reducing operating and idle time

**REPLACE** existing engines with new cleaner diesel engines, hybrid engines, or engines compatible with alternative fuels

### Calculate Emissions Reductions

The Quantifier

<http://cfpub.epa.gov/quantifier/>



### Why Use Clean Diesel Equipment?

- Exposure to diesel emissions such as particulate matter (PM) can have serious health effects, e.g. asthma attacks, heart attacks.
- Diesel exhaust is a “likely human carcinogen.”
- Site workers and surrounding communities are potential exposed to harmful diesel emissions.
- Diesel engines emit hydrocarbons (HC) and nitrogen oxides (NOx) which contribute to smog, and carbon monoxide (CO), a poisonous gas.

### What are Some Retrofit Options?

The most common retrofit options are diesel particulate filters (DPFs) and diesel oxidation catalysts (DOCs), both of which fit on engines like mufflers.

Retrofit Device	Reductions	Cost/retrofit
DPF	PM 60-90% HC 60-90% CO 60-90%	\$7,000—\$10,000
DOC	PM 40-50% HC 50% CO 50%	\$500—\$2,000

### What are Some Alternative Fuel Options?

Alternative Fuel	Reductions	Cost/gal vs. diesel
B20 Biodiesel*	PM 10% CO 10% HC 21%	~ 3¢ less
Emulsified Fuel	PM 16-58% NO <sub>x</sub> 9-20% CO 13%	~ 20¢ more
Natural Gas	PM 90% NO <sub>x</sub> 50% CO 90% HC 50-75%	~ \$1 less

\*Blend of 20% biodiesel, 80% diesel. Further research is needed but some studies have shown slight increases in NOx when u el.

### Funding Resources

- Carl Moyer Program (CA only): [www.arb.ca.gov/msprog/moyer/moyer.htm](http://www.arb.ca.gov/msprog/moyer/moyer.htm)
- National Clean Diesel Campaign (EPA): [www.epa.gov/cleandiesel/](http://www.epa.gov/cleandiesel/)

Go to the **Cleanup-Clean Air website** at [www.epa.gov/region9/cleanup-clean-air](http://www.epa.gov/region9/cleanup-clean-air) for

- ◆ More Information on Cleaner Diesel
- ◆ Cleanup-Clean Air Pilot Projects
- ◆ Smart Energy Resources Guide
- ◆ Factsheets
- ◆ Cleanup-Clean Air Updates
- ◆ Cleanup-Clean Air Staff Contact Info
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