

Diesel Exhaust Fluid

A New Market Opportunity for the Diesel Fueling Industry

What is DEF?

- Diesel Exhaust Fluid or Diesel Emissions Fluid, is a mixture of water and urea (an ammonia-containing solution) which combines with nitrogen oxide (NOx) to form harmless by-products. DEF is commonly referred to as “urea”

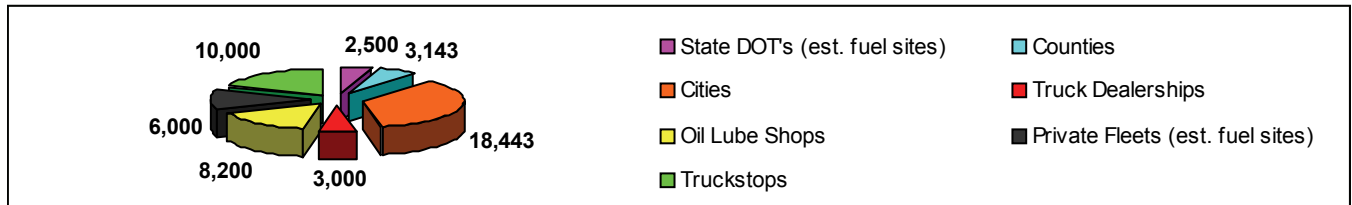
Why is DEF important?

- Starting January 2010, the U.S. Environmental Protection Agency now requires substantially reduced levels of nitrogen oxide (NOx) emissions from heavy duty commercial vehicles
- DEF can reduce up to 90% of harmful nitrogen oxide (NOx) emissions from diesel engines
- DEF will substantially impact the additional fueling needs for many diesel engine vehicles in the U.S.
- DEF will require manufacturers to develop DEF storage and dispensing solutions

Will DEF be required for use by all heavy duty commercial vehicles?

- Two types of diesel engines: Selective Catalytic Reduction (SCR) and Exhaust Gas Circulation (EGR)
- The SCR methodology require DEF (all but one U.S. and all European truck engine manufacturers prescribe to SCR)
- SCR is the “only emissions control solution proven to meet the 2010 emissions control standards set by the Environmental Protection Agency”, www.FactsAboutSCR.com
- The EGR methodology will require a larger engine that will re-circulate exhaust and does NOT require the use of DEF. Navistar, prescribes to EGR, and uses “emissions credits the company has earned by producing some engines below current EPA standards to buy extra time for fine-tuning the programming on the new engines”, May 1, 2009, www.FleetOwner.com

Which end markets segments will require DEF and related equipment?



***State DOT's" (Department of Transportation) and "Private Fleets" are estimates based on information provided by constituent organizations.

How will DEF be supplied to the marketplace?

DEF can be purchased in 2-5 gallon jugs, 55 gallon drums and 275-330 gallon IBC totes. DEF can be supplied in bulk for above-ground and under-ground tanks. The BlueFueler[®] DEF dispenser can be used with drums, totes and tanks.

DEF consumption in the U.S. is anticipated to grow considerably over the next several years, as shown below. Information provided by Integer Research 2009. DEF consumption is estimated at 21 million, 317 million and 800 million gallons in 2010, 2014 and 2019, respectively.

