

QUESTION:

Why do RTA buses emit thick black smoke from exhaust pipes? Is this dangerous to our environment and citizens?

We recognize that as operators of diesel buses, RTA has a difficult challenge of explaining why at times there is considerable smoke being emitted from the exhaust pipes of some of the vehicles, please let us explain.

ANSWER

Effective 2007, the Environmental Protection Agency (EPA) required manufacturers of diesel engines to *reduce* Nitrogen Oxide (NOx) emissions and Particulate Matter (PM) emissions also known as soot by 90% compared to the standard that existed in 2004. This is true for all diesel engines for on road use manufactured in the United States.

In order to meet the 2007 standard, which was strengthened again in 2010, diesel engine manufacturers modified diesel technology by introducing Diesel Particulate Filters (DPF). A few points about DPF:

- DPFs are exhaust after treatment devices that reduce emissions from diesel fueled vehicles.
- DPFs physically trap particulate matter and remove it from the exhaust stream.
- Trapped particulate matter is reduced to a non-harmful ash substance during what is known as regeneration. Regeneration is a burning process where the trapped particulate matter is burned into ash and emitted through the exhaust in a periodic purging process.
- Regeneration is a process that occurs naturally in this technology when the exhaust gas temperatures are high enough to initiate combustion or burning of the trapped particulate matter trapped in the DPF.
- The thick black smoke that citizens are noting coming from the exhaust pipe comes from this process of the burning or combustion of the ash in the DPF. ***The ash is not a health hazard according to EPA.***
- The ash being emitted is unsightly and has an odor, but is part of the EPA's and engine manufacturers' efforts under United States law to reduce emissions from diesel engines.

- Although gasoline and diesel engines are fundamentally different, part of the EPA effort to reduce gasoline engine emissions has been through use of a catalytic converter. Although catalytic converters are different than DPFs, there are some similarities. Catalytic converter technology has been available since the late 1970's and has been perfected over the years, however the "rotten egg smell" still experienced in stopped traffic with gasoline engines has some similarities to the regeneration of ash smoke in diesel DPF regeneration technology.

Types of Vehicles that make up the RTA Fleet

Currently the fleet is made up of (42) fixed route buses, (24) paratransit vans and (11) support vehicles totaling (77) units in service. Service units cover (15) routes and serve over 1.8 million riders a year in Howard County, Anne Arundel County, Northern Prince George's County and the City of Laurel.

In 2014 the RTA was formed inheriting two (2) legacy route systems; Howard Transit and Connect a Ride along with a combined fleet which contained a myriad of transportation bus models of all ages and service challenges. RTA bus models are featured below:

Models of the RTA Fleet:

3	Thomas Buses; http://www.thomasbus.com/
17	Gillig Buses http://www.gillig.com/
18	Eldorado/International Buses (Truck Style) http://www.navistar.com/navistar/globalportfolio/products/buses
2	Nabi Buses http://www.nabusind.com/
1	Chevy Truck Bus http://www.bing.com/images/search?q=chevy+bus&id=22C28A12F5CFA624E742C1B8BD3EA0C86EE694C0&FORM=IQFRBA
17	Ford E450 https://www.coachandequipment.com/
7	Ford Fusions http://www.ford.com/cars/fusion/

The 2010 Eldorado/International portion of the fleet (18 buses in total) ***have been showing what appears to be dangerous exhaust but is actually the burned ash substance emitted through the exhaust system in the regeneration process.***

The International brand engines in the El Dorado vehicles have ***passive regeneration which happens naturally while a vehicle is in operation as opposed to active regeneration which requires taking special action usually when in transit mode and the vehicle is not in service.***

These Eldorado/International brand buses have a tailpipe where the exhaust and the regenerated ash is emitted at the rear end of the vehicle and low to the pavement surface which makes more noticeable to citizens than other diesel vehicles. Over-the-road diesel trucks and most other transit vehicles have tail pipe exhaust located at the top of the vehicle not as easily seen and noticed by others. These vehicles have regeneration, but with exhaust and regeneration ash

emitted on exhaust pipes high on the vehicle is not as noticeable at the level of other motorists and pedestrians.

The Eldorado/International vehicles were designed for a number of applications including delivery and other truck applications and not specifically for the rugged stop and go of transit use. In addition, much of this part of the fleet is at or approaching 400,000 miles with an engine design life of 250,000 miles. With this high mileage, it is reasonable that the exhaust by-products of an engine this worn out will have some emissions different than if the engine were at its 250,000 design life. This means that the exhaust trapped by-products in the DPF may be different than for a design life engine (up to 250,000 miles). The literature indicates that high mileage engines may require DPFs to be cleaned and exchanged more often, and at some point a number of the engine components including DPF-regeneration just do not work as well. This is why well-functioning fleets have defined vehicle replacement schedules for which you are showing good advocacy for the future of RTA.

When will the fleet improve and become more environmentally friendly?

Howard County will receive seven (7) new buses scheduled for delivery in January 2018. These 7 vehicles with heavier duty engines will replace the 2010 Eldorado/International vehicles most noticeable and causing the greatest number of problems.

Presently Howard County is overseeing a Grant to purchase (3) fully Electronic vehicles from BYD in California. These vehicles are scheduled to deliver in late spring or early summer of 2017.

RTA's maintenance department continues a strict maintenance schedule of inspecting, cleaning and/or replacing the DPF units and other exhaust-regeneration components at least every 6 months instead of every 12 months as had been the practice previously.

As a concerned citizen, how can I get more involved?

Currently the RTA is participating in a Central Maryland Transit Development Plan. The Transit Development Plan (TDP) serves as a guide for transit services in the Central Maryland region, including Anne Arundel County, Howard County, Northern Prince George's County, and the City of Laurel. It provides a roadmap for implementing service and organizational improvements, including potential service expansion, during the next five years.

- Establish the region's goals and objectives for transit.
- Review and assess current transit services.
- Identify unmet transit needs and services issues.
- Develop service alternatives, recommendations, and an implementation plan.

To learn more about the TDP and to participate in our TDP Community survey visit:
<https://www.kfhgroup.com/centralmd/transitplan.html>.

If you wish to contact the RTA regarding the above information please call 1-800-270-9553 or email consumer@transitRTA.com.

Additional Resources

<http://www.meca.org/regulation/us-epa-20072010-heavyduty-engine-and-vehicle-standards-and-highway-diesel-fuel-sulfur-control-requirements>

<http://www.dieselnet.com/tech/dpf.php>

<http://www.worktruckonline.com/channel/fuel-management/article/story/2008/01/what-fleet-managers-should-know-about-diesel-particulate-filters.aspx>