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Members of the Minnesota Legislature House Commerce Finance and Policy Committee.

I am writing today as Executive Director of the Diesel Technology Forum regarding Minnesota House Commerce Committee Bill HF 1337 the "Digital Fair Repair Act."

The Diesel Technology Forum is a national not-for profit educational organization that represents manufacturers of diesel engines and equipment, components, petroleum, and renewable biofuel producers. A list of our members follows at the end of this statement.

I would like to express our **opposition to HF 1337** because if enacted, it will:

- make Minnesota's air dirtier, not cleaner,
- facilitate tampering with emissions controls, a practice that is in clear violation of the federal Clean Air Act, and
- jeopardize heavy-equipment safety for both farmers, vehicle service technicians and the public that share roads.

Diesel engines power nearly all farm tractors and machines thanks to its unique combination of efficiency, power, durability, and reliability. Over the last two decades, manufacturers of diesel engines and equipment have invested billions of dollars to reduce emissions to todays near zero levels and meet federal clean air requirements, as you can see in the attached chart. All Minnesotans are benefitting from these investments today in the form of cleaner air. Enacting HF 1337 will jeopardize this progress.

Achieving near-zero emissions from diesel engines is accomplished by a highly integrated system of computers and controllers that control the combustion process and treats the exhaust emissions on a real time basis, using sophisticated systems like selective catalytic reduction (SCR) and diesel particulate filters.

SCR systems are active emissions scrubbers on the vehicle – one where in a specialized catalyst, exhaust gases are treated by carefully calibrated sprays of Diesel Exhaust Fluid ("DEF"; aqueous urea) resulting in a chemical reaction that virtually eliminates nitrogen oxide emissions. Because it is an active system, DEF fluid must be refilled periodically based on fuel consumption, and that costs money. Today's DEF costs about $30-$40 dollars for a 2.5-gallon jug. Row crop Tractors can typically hold 4-6 gallons.

Unfortunately, some creative individuals and repair shops have illegally accessed the engine computer and software and reprogramming to "trick" the engine into thinking that the SCR systems are dosing and operating properly, and diesel exhaust fluid levels are full, when in fact they are not operating at all or at very diminished levels, which is advertised as saving the operator the cost of refilling DEF fluid and avoiding expensive maintenance on particulate filters.

Sometimes called chipping, tuning or ECU remapping, this service is being offered to farmers by a variety of individuals and companies. "Right to Repair" legislation will further facilitate this practice by providing open access to engine emissions control software, which is why we are opposed. Making changes to engine control units (ECU's) – computers and their controllers– to enhance the performance or evade emission controls has become a significant issue across North America. Being sold as "boosting performance" for pennies on the dollar compared to the cost of buying higher-capacity equipment" saving money through bypassing maintenance on emissions control systems; this practice must look like an attractive proposition, but it's not. It may void the equipment's warranty insurance agreements and is illegal in the U.S.

This practice will result in increased emissions of nitrogen oxides and particulate matter

What HF 1337 legislation would do, if enacted, would be to enable the defeat of these systems, denigrate emissions performance and make agricultural and forestry equipment dirtier not cleaner, and increase emissions, not reduce them.

Manufacturers are subject to a wide range of federal requirements in building and warranting their products for emissions performance. Some of these are listed below.

- **Durability Regulations/Testing:** 40 CFR 1039.240, 1039.245; see also 1039.101(g) (useful life requirements); see 42 USC § 7525(a)(1) reference to testing to determine conformance to regulations prescribed under § 7521; § 7521(a)(1) requires regulations to prescribe a "useful life" over which vehicles/engines shall comply with emission standards.
- **Degradation Factor/In-Use Testing:** 40 CFR 1039.240, 1039.245, 1039.401; 42 USC § 7541(c)(6)
- **Tamper Resistant Emissions Systems**
    - 40 CFR Part 1039 -- Control of Emissions from New and In-Use Nonroad Compression-Ignition Engines for Part 1039 regs.
    - 42 U.S.C. 7522 (a)(3)
    - 42 U.S.C. 7522 (a)(4)
    - 42 U.S.C. § 7413(c)(2)(C). It is a crime to knowingly falsify, tamper with, render inaccurate, or fail to install any "monitoring device or method" required under the CAA. Per EPA, "Vehicle Onboard Diagnostics (OBD) are a "monitoring device or method" required by the CAA."

Under these regulations, OEMs could be held liable for providing a "defeat device" to the market in the form of a service tool that allows end-users to circumvent certain engine/machine performance inhibitors related to emission controls.

This is especially true for SCR-equipped engines that rely on routine end-user action (e.g., filling the DEF tank) to ensure proper operation of the SCR system. If the end-user doesn't take that action, the regulations require engine manufacturers to inhibit operation of the engine, going into a limp mode and then shutting it down until repaired.

If OEMs provide customers the tool for overriding those inhibitors, that's considered circumventing the regulatory requirements. This may not be an obvious take-away after reading the referenced regulations and statutes. The California Air Resources Board (CARB) and USEPA, however, have gone through a lengthy process of interpreting those references and providing guidance to the industry that delivers this outcome.

The US EPA Air Enforcement Division ("AED") released a substantial report in November of 2020 regarding the incidence of tampering with diesel engines and emissions controls.

- Based on EPA enforcement actions, they identified that a substantial portion of the subject vehicles identified by USEPA enforcement actions had software modifications to their engine emissions control units.
- As a result, USEPA AED estimates that the emissions controls have been removed from more than 550,000 diesel pickup trucks nationwide in the last decade. As a result of this tampering, more than 570,000 tons of excess oxides of nitrogen (NOx) and 5,000 tons of particulate matter (PM) will be emitted by these tampered trucks over the lifetime of the vehicles.
- The report did not directly quantify the extent of tampering in off road engines and equipment, but it notes that **…AED has reason to believe this conduct occurs within most or all categories of vehicles and engines , including commercial trucks, passenger vehicles , pickup trucks, motorcycles , forestry equipment, and agricultural equipment.**
- These findings highlight the challenging and real problem of what happens when there is tampering with engine emissions controls; passage of HF 1337 would only further enable, facilitate, and encourage this practice.

Some of you might remember a few years ago the Volkswagen emissions cheating scandal. Investigations revealed the use of a defeat device – software code programming– that effectively turned off emissions controls during normal operations that allowed the vehicle to get better performance and fuel economy but also increased emissions. The same software then turned the emissions controls back on when it sensed a standard vehicle certification and inspection test was underway. This incident cost VW well over $30 Billion in fines and penalties.

So called “Fair Repair” legislation like this goes in this same general direction-facilitating tampering with software that impacts engines and emissions controls, effectively saying it is okay for anyone to mess around with the computer controls and software on a tractor to save a dollar or two or a little time.

It’s one thing to be able to fix a cellphone. But rewriting software codes for engine programming and emissions controls on a 30,000 lb. farm tractor that can run at 20 mph is not what we want.

For all these reasons and others, HF 1337 should not be enacted because takes Minnesota the wrong way for clean air and the wrong way on safety.

Thank you for considering these comments.

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