



March 10, 2021

Re: ethanol in Minnesota

Dear Members of the Minnesota House Commerce Finance and Policy Committee:

The American Lung Association does not have a position on HF1433 as it is brought up for discussion in committee today, but given that this is a topic that may be less familiar to some of the committee members and given that we have worked on ethanol infrastructure development in Minnesota for more than two decades, I wanted to put forward our availability to try to help answer questions as these types of issues continue to be debated this session.


For context, the American Lung Association in Minnesota first engaged in ethanol issues when the Twin Cities were selected by the U.S. Department of Energy for a pilot project in the late 1990's on developing fueling infrastructure for E85, which is a fuel blend up to 85 percent ethanol that can be used in flex fuel vehicles interchangeably with gasoline. Tailpipes are Minnesota's largest source of many air pollutants and we work on a variety of projects that support the increased use of cleaner fuels and electric vehicles to help reduce emissions.

In the two decades since that first pilot project, we have been deeply involved in the development of ethanol infrastructure at retail fuel stations, often facilitating or assisting grant programs from private, state, and/or federal funding sources that helped with installing infrastructure compatible with higher ethanol blends. Today, Minnesota has more fuel stations offering E85 and/or E15 than any other state in the nation.

Included with this letter are two additional resources. One is a recent review we did of Minnesota's gasoline storage infrastructure, from the [MPCA's underground storage tank database](#). The other is an article on lung health and air pollution, with a more in-depth look at tailpipe emissions and reductions possible from ethanol blends, which was printed last year in POET Ethanol's [Vital magazine](#).

If there are any questions that we might be able to help answer, please feel encouraged to contact me at jon.hunter@lung.org or 651-268-7601.

Thank you,


Jon Hunter
Senior Director, Clean Air

Review of Underground Storage Tank data available from the Minnesota Pollution Control Agency

Note: there is a great deal of information available on fuel sites in the MPCA database, but also some margin of error in these numbers because of normal limits/issues in data collection spanning decades. Individual station records can be accessed at <https://webapp.pca.state.mn.us/tank-leak/sites>.

This review is mostly limited this to tanks that are listed as "Active" (i.e. excluding "closed" tanks) and containing some form of gasoline or ethanol blend (i.e. excluded anything marked as diesel, DEF, or other materials).

With all the above limits, this review includes 3,185 locations, reviewed in February 2021. There are more than 7,800 tanks in service at those locations. This list includes fleet locations (like MNDOT, school buses, etc.), resorts, dealerships, and many other types of locations, in addition to gasoline retailers.

Tank Age

Age Range	Number of Location	Percentage
Unknown	85	2.67%
Over 50 years	48	1.51%
40 to 50	115	3.61%
30 to 40	988	31.02%
20 to 29	1,310	41.13%
10 to 19	342	10.74%
6 to 10	132	4.14%
5 & under	165	5.18%

Average age of gasoline tanks at a location.

Tank Capacity

Capacity	Number of Location	Percentage
Under 1000	42	1.32%
1000-2000	80	2.51%
2000-4000	138	4.33%
4000-6000	87	2.73%
6000-10000	151	4.74%
10000-20000	781	24.52%
20000-40000	1,538	48.29%
Over 40000	367	11.52%

Total gallon capacity of gasoline tanks at a location (i.e. 6,000gl tank + 4,000 tank = 10,000 capacity)

Compatibility

Uniform testing standards are used for manufactures to demonstrate what ethanol content their equipment will safely work with. Depending on the type of equipment, testing can include levels for use with E10 (0-10% ethanol), E25 (0-25% ethanol), E85 (up to 85% ethanol), or E100 (all levels of ethanol).

Tank Materials

Larger categories in the database – does not include 100% of tanks.

Material	Count	Percent of tanks	Notes on ethanol blends above 10%
STI-P3	3,579	46.56%	E100 compatible
Jacketed Steel	968	12.6%	E100 compatible
Bare Steel	482	6.2%	E10-only compatibility
Composite	238	3.1%	E100 compatible
Fiberglass	2,411	31.2%	Approximately half compatible with all ethanol blends. Breakout below.
Double-wall since 1990	1,189	49.5%	E100 compatible
Double-wall prior to 1990	40	1.67%	E10 only
Single-wall prior to 2005	1,140	47.5%	E10 only
Single-wall since 2005	31	1.29%	Likely E100 compatible

Fiberglass Tank Compatibility Details

	E10	E100
Manufacturer	✓	✓
FIBERGLASS^a		
Containment Solutions	✓	✓
Owens Corning (single wall 1965-1994)	✓	✗
Owens Corning (double wall 1965-July 1, 1990)	✓	✗
Owens Corning (double wall July 2, 1990-December 31, 1994)	✓	✓
Xerxes (single wall prior to February 1981)	✗	✗
Xerxes (single wall February 1981-June 2005)	✓	✗
Xerxes (single wall since July 2005)	✓	✓
Xerxes (double wall prior to April 1990)	✓	✗
Xerxes (double wall April 1990 and after)	✓	✓

Fiberglass Tank Warranties

Containment Solutions – 30 years from date of original delivery

Xerxes – 30 years from date of original delivery

Owens Corning – originally 30 years, but all warranties were ended during a 2006 bankruptcy proceeding.

Source: US Department of Energy Handbook for Handling, Storing, and Dispensing E85 and Other Ethanol-Gasoline Blends (2016)

Pipe Material

Piping materials listed at the above tank locations.

Material	Count	Percent of sites	Notes on ethanol blends above 10%
Flexible	1,040	32.7%	Most E15 or higher compatible (~5% not)
Fiberglass	1,014	31.8%	Up to E85 or E100
Steel	1,056	33.2%	Not compatible above E10
Other or Unknown	74	2.3%	

For additional information or questions:

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status are among those at higher risk for health impacts from air pollution near roadways.

Healthy lungs are our first defense against respiratory illnesses and viruses like COVID-19, and it is important to ensure that the air we breathe is as clean as possible. Reducing PM2.5 emissions, which have been directly linked with the spread of COVID-19, can help reduce our vulnerability.

The transportation sector provides two areas in which emission reductions can be achieved; through improvements in engine technologies and the use of alternative fuels. Vehicle technologies are constantly being improved, but more can be done to contribute to emission reductions by using renewable fuels like higher blends of ethanol.

When shelter-in-place orders are fully lifted and it is time to start driving again, it is important to con

- Cause coughing and sore or scratchy throat;
- Inflammation and damage the airways;
- Aggravate lung diseases such as asthma, emphysema and chronic bronchitis;
- Cause chronic obstructive pulmonary disease (COPD).



Transportation emissions also contribute to high levels of air toxics called volatile organic compounds (VOCs), which are compounds that are known or suspected to cause cancer or other serious health effects. Examples of mobile source air toxic VOCs include benzene and formaldehyde. Health impacts of air toxic pollutants at harmful concentrations and qualifying durations can include:

- Increased cancer risk
- Damage to the immune system;
- Neurological disorders;
- Developmental disorders; and
- Respiratory health problems.



Carbon dioxide (CO₂) enters the atmosphere through the burning of fossil fuels and certain chemical reactions. Carbon dioxide is generally removed from the atmosphere when it is absorbed by plants; however, an overabundance of CO₂ contributes to greenhouse gas formation. Greenhouse gases can remain in the atmosphere for different amounts of time, ranging from a few years to thousands of years.



Nitrogen dioxide (NO₂) is another pollutant that is primarily released into the air through the combustion of fuel used for transportation. As a member of a group of highly reactive gases known as nitrogen oxides, NO₂ is used as the indicator for the larger group and contributes to the formation of tropospheric ozone.

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