Air Quality: Potential Impacts of Shale Development in Ohio

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Shale Potential in Ohio

Source: ODNR Division of Oil and Gas Resources Management

** USEPA, Region 5 Final Designations, April 2012, [www.epa.gov](http://www.epa.gov)
Fracking Emission Sources

1. Diesel & Water Tanker Trucks (Off-road)
2. Diesel engine powered drilling and generator trucks (Off-road)
3. Well-head compressors, pumps, generators and heaters
4. • Diesel engine powered drill rigs & fracing pumps
   • Blowdown & completion venting (major source CH₄)
5. Flaring
6. Flowback fluids storage pits
7. Condensate & Oil tanks
8. Compressor stations, gas plants, heaters and dehydrators
9. Fugitive emissions from transmission pipelines
10. Gas & oil processing facility
Experience from Other Regions: Ozone

Episode average difference in daily max 8-hour O3

Episode maximum difference in daily max 8-hour O3

Ozone chemistry in atmosphere

Experience from Other Regions: Criteria Pollutants

Source Categories in Barnett Shale


** ENVIRON, Development of emissions inventories for natural gas exploration and production activity in the Haynesville shale, (2009)
Experience from Other Regions: Greenhouse Gases

Barnett Shale (Armendiaz 2009 *)

Fugitive Methane emissions (Howarth et al., 2011 **)

3.6 – 7.9% fugitive of total production

Total Fugitive CO$_2$e
7.2 gC/MJ (Low)

Total Fugitive CO$_2$e 15.7 gC/MJ (High)


** R.W. Howarth, R. Santoro, A. Ingraffea, Methane and greenhouse gases footprint of natural gas from shale formations, Climate Change (2011)
Greenhouse Gases: Ohio Status

- Residential: 6th
- Industrial: 6th
- Transportation: 7th
- Electric Power: 2nd

Total CO₂ Emissions: 4th

% Contribution to Total CO₂ in U.S.

- TX: 268 MMTCO₂
- CA: 4.5%
- PA: 677 MMTCO₂
- OH: 677 MMTCO₂
- FL: 4.5%
- IL: 4.5%
- IN: 4.5%

Source: Energy Information Administration (2009)
Create for Good.