

Freeways are a Public Health Hazard

1. Studies show that the zone of increased pollution along a freeway corridor (compared to community wide concentrations) is approximately two miles wide.
2. People who live, work or travel within 165 feet downwind of a major freeway are exposed to the most dangerous part of air pollution, ultrafine particulate matter, at concentrations 25-30 times higher than the rest of the community.
3. For people who live near a freeway, the concentration of freeway generated pollution inside their homes is about 70% as high as outdoor air along the freeway corridor. For an average home, the indoor air exchanges completely with outdoor air every two hours. People living near a freeway are unquestionably breathing more pollution.
4. Wasatch Front air pollution is already a serious public health hazard. Our air pollution is sometimes the worst in the nation and typically we rank in the top ten worst cities in the country for acute spikes in air pollution. All of the health consequences of air pollution are found at even higher rates among people who live near freeways or other high traffic locations, including heart and lung diseases, strokes, shortened life spans, higher mortality rates, poor pregnancy outcomes, multiple types of cancer and even autism. Freeways are literally cancer and autism corridors.

**Thousands of studies confirm the health threat of freeway pollution.
Below is a small sampling of those studies.**

The rate of progression of hardening of the arteries, the cause of strokes, heart attacks and generalized aging, is double for those living within 100 meters of a freeway.

[Künzli N, Jerrett M, Garcia-Esteban R, Basagaña X, Beckermann B, et al. \(2010\) Ambient Air Pollution and the Progression of Atherosclerosis in Adults. PLoS ONE 5\(2\): e9096. doi:10.1371/journal.pone.0009096](#)

Children who live within 500 meters of a major highway are not only more likely to develop asthma and other respiratory diseases, but their lung development may also be stunted permanently.

[Gauderman WJ, et al. "Effect of exposure to traffic on lung development from 10 to 18 years of age: a cohort study," The Lancet, Volume 368, February 2007.](#)

Living within 1,000 ft of a freeway doubles the risk of a child being born with autism.

[Volk HE, Hertz-Picciotto I, Delwiche L, Lurmann F, McConnell R. Residential proximity to freeways and autism in the CHARGE study. Environ Health Perspect. 2011 Jun;119\(6\):873-7. doi:10.1289/ehp.1002835. Epub 2010 Dec 13.](#)

Children growing up with more traffic pollution have significantly lower IQs and

impaired memory.

Suglia SF, et al. Association of Black Carbon with Cognition among Children in a Prospective Birth Cohort Study *Am J Epidemiology* 2008 167:280-286

Pregnant mothers exposed to more air pollution, give birth to children with lower intelligence, and behavioral and attention deficit disorders, even if the children breathe clean air themselves.

Frederica P. Perera, Deliang Tang, Shuang Wang, Julia Vishnevetsky, Bingzhi Zhang, Diurka Diaz, David Camann, Virginia Rauh. Prenatal Polycyclic Aromatic Hydrocarbon (PAH) Exposure and Child Behavior at age 6-7. *Environmental Health Perspectives*, 2012; DOI: 10.1289/ehp.1104315

Edwards SC, Jedrychowski W, Butscher M, Camann D, Kieltyka A, Mroz E, et al. 2010. Prenatal Exposure to Airborne Polycyclic Aromatic Hydrocarbons and Children's Intelligence at Age 5 in a Prospective Cohort Study in Poland. *Environ Health Perspect* :- doi:10.1289/ehp.0901070

Pregnant women who lived close to high-traffic roadways during pregnancy were more likely to give birth prematurely or have a low-weight baby, putting the child at risk for multiple, life long chronic diseases

Laurent O, Wu J, Li L, Chung J, Bartell S. Investigating the association between birth weight and complementary air pollution metrics: a cohort study. *Environ Health*. 2013 Feb 17;12(1):18. doi: 10.1186/1476-069X-12-18.

Wilhelm M, et al. Traffic-Related Air Toxics and Term Low Birth Weight in Los Angeles County, California. *Environ Health Perspect*. 2012 January; 120(1): 132–138. Published online 2011 August 11. doi: 10.1289/ehp.1103408

Living within 100 meters of a freeway increases the risk of childhood leukemia 370%, living within 300 meters increases the risk 100%.

Amigou A, et al. "Road traffic and childhood leukemia: The ESCALE study (SFCE) authors" *Environ Health Pers* 2010; DOI: 10.1289/ehp.1002429.

Pregnant mothers breathing higher rates of air pollution give birth to children who have higher rates of several types of rare childhood cancers.

Prenatal air pollution associated higher rates of retinoblastomas, ALL, and germ cell tumors. <http://www.aacr.org/home/public--media/aacr-in-the-news.aspx?d=3062>

Women exposed to more traffic-related air pollution have higher rates of breast cancer and decreased survival if they get breast cancer. Background Wasatch Front levels correlate with an increase of about 125%, living near a freeway increases that much more.

Crouse DL, Goldberg MS, Ross NA, Chen H, Labrèche F 2010. Postmenopausal Breast Cancer Is Associated with Exposure to Traffic-Related Air Pollution in Montreal, Canada: A Case–Control Study. *Environ Health Perspect* 118:1578-1583. doi:10.1289/ehp.1002221

Chronic exposure to traffic air pollution increases the risk of lung cancer.

Raaschou-Nielsen O, Andersen Z, Hvidberg M, Jensen SS, Ketzel M, Sørensen M, Loft S, Overvad K, Tjønneland A. Lung Cancer Incidence and Long-Term Exposure to Air Pollution from Traffic. *Environ Health Perspect*. 2011 Jan 12. [Epub ahead of print]

High traffic air pollution exposure more than doubles the rate of cervical and brain cancer, and increases the risk of prostate cancer and stomach cancer

Raaschou-Nielsen O, Andersen ZJ, Hvidberg M, Jensen SS, Ketzel M, Sørensen M, Hansen J, Loft S, Overvad K, Tjønneland A. Air pollution from traffic and cancer incidence: a Danish cohort study. *Environ Health*. 2011 Jul 19;10:67. doi: 10.1186/1476-069X-10-67.

Parent ME, Goldberg MS, Crouse DL, Ross NA, Chen H, Valois MF, Liautaud A. Traffic-related air pollution and prostate cancer risk: a case-control study in Montreal, Canada. *Occup Environ Med*. 2013 Mar 26. [Epub ahead of print]

People exposed to more traffic related air pollution have more DNA damage, a trigger for multiple chronic diseases including cancer.

Huang HB, Lai CH, Chen GW, Lin YY, Jaakkola JJ, Liou SH, Wang SL. Traffic-related air pollution and DNA damage: a longitudinal study in Taiwanese traffic conductors. *PLoS One*. 2012;7(5):e37412. doi: 10.1371/journal.pone.0037412. Epub 2012 May 21.

Traffic related air pollution shortens telomeres (a critical part of chromosomes). Shortened telomeres are highly correlated with reduced life expectancy

McCracken J, Baccarelli A, Hoxha M, Dioni L, Melly S, Coull B, Suh H, Vokonas P, Schwartz J. Annual ambient black carbon associated with shorter telomeres in elderly men: Veterans Affairs Normative Aging Study. *Environ Health Perspect*. 2010 Nov;118(11):1564-70.

Residential proximity to major roadways is associated with decreased kidney function.

Lue S, Wellenius G, Wilker E, Mostofsky E, Mittleman M. Residential proximity to major roadways and renal function. *J Epidemiol Community Health* Published Online First: 13 May 2013 doi:10.1136/jech-2012-202307

Long term exposure to traffic-related air pollution is associated with insulin resistance in children and type II diabetes in adults

Thiering E, Cyrys J, Kratzsch J, Meisinger C, Hoffmann B, Berdel D, von Berg A, Koletzko S, Bauer CP, Heinrich J. Long-term exposure to traffic-related air pollution and insulin resistance in children: results from the GINIplus and LISAPLUS birth cohorts. *Diabetologia*, DOI 10.1007/s00125-013-2925-x

Chen H, Burnett RT, Kwong JC, Villeneuve PJ, Goldberg MS, Brook RD, van Donkelaar A, Jerrett M, Martin RV, Brook JR, Copes R. Risk of Incident Diabetes in Relation to Long-term Exposure to Fine Particulate Matter in Ontario, Canada. *Environ Health Perspect* (). doi:10.1289/ehp.1205958

Liu C, Ying Z, Harkema J, Sun Q, Rajagopalan S. Epidemiological and Experimental Links between Air Pollution and Type 2 Diabetes. *Toxicol Pathol*. 2012 Oct 26. [Epub ahead of print]

Compiled by the Utah Physicians for a Healthy Environment