

# AIR QUALITY AND SPRAWL



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# Urban Sprawl Defined

- The unplanned, uncontrolled spreading of urban development into areas adjoining the edge of a city.



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# AIR POLLUTION AND SPRAWL

Spread-out, sprawling developments make car travel the most convenient way to get around. Driving creates more smog, which has been linked to:

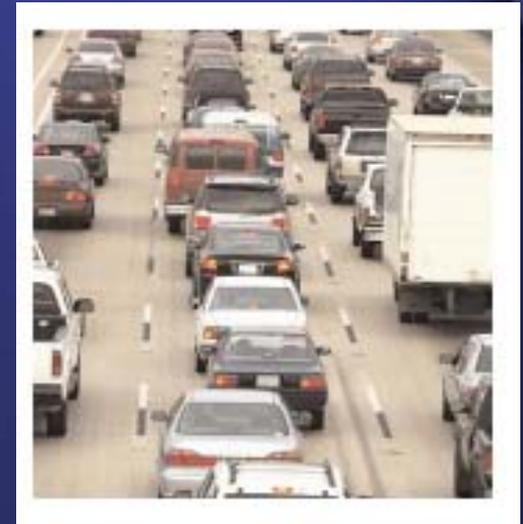
- respiratory conditions such as asthma
- cardiovascular disease
- lung cancer
- delayed lung development
- negative effects on pregnancy
- birth defects



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- *Living close to a major road can take 2.5 years off your life.*
- *Researchers found a 5-8% increase in asthma and bronchitis symptoms among children exposed to traffic-related pollutants.*



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# Delaware's Problem Air Pollutants

- Ground-level ozone is formed when nitrogen oxides and volatile organic compounds (VOCs) react in the presence of sunlight.
- Fine particulate matter can be formed by reactions of other primary pollutants in the air, or by direct emissions from vehicles. Smaller particulate matter is more dangerous because it becomes lodged in your lungs more easily. Most particulate matter is produced from the burning of fossil fuels.



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# TYPES OF AIR EMISSIONS FROM RESIDENTIAL DEVELOPMENT

Mobile – Motor vehicle emissions from the tailpipe and leaks from fuel systems

Residential – Emissions from wood combustion, architectural coatings, consumer products that contain VOCs, lawn and garden equipment (engine emissions and evaporation), and portable fuel containers.

Electrical Power – Emissions from electricity generating units throughout our region.



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# DELAWARE PROJECTED AIR EMISSIONS FROM PROPOSED RESIDENTIAL DEVELOPMENT\*

(TONS PER YEAR)

	VOC	NOx	SO2	PM2.5	CO2
Mobile	1,018	1,064	31	12	656,889
Residential	688	76	63	81	2,789
Electrical Power	-	273	948	-	139,893

\* PLUS Projects submitted in 2007 and 2008.



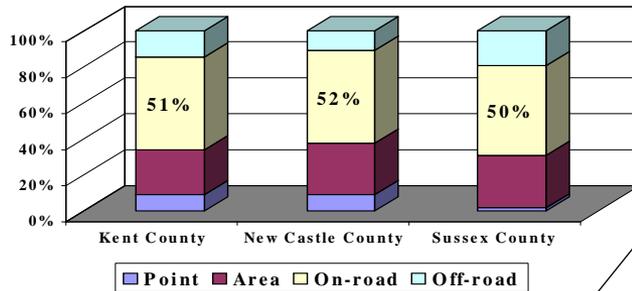
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# AIR TOXICS

## Health Impact of On-Road Air Toxics Emissions

Delaware Sources of Cancer Risk  
NATA-1999



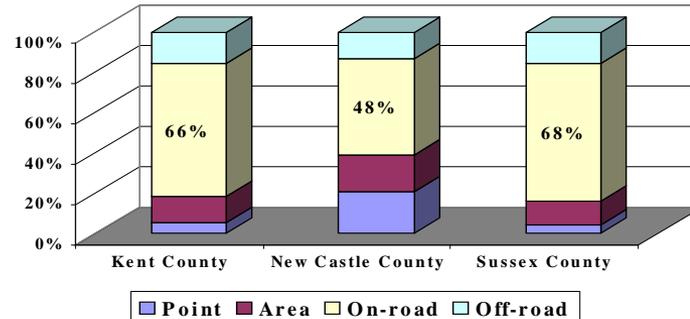
### Respiratory Irritant

- Acrolein
- Formaldehyde
- Acetaldehyde

### Selected Carcinogens

- Benzene – A
- 1,3 Butadiene – A
- Formaldehyde – B1
- Acetaldehyde – B2

Delaware Sources of Non-cancer Respiratory Risk  
NATA-1999



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# KEEP DEVELOPMENT WITHIN THE DELAWARE GROWTH ZONE

- *A typical development of 100 units that is planned 10 miles outside the growth areas will have an additional 59 tons per year of VOC emissions, 77 tons per year of NOx emissions and 1 ton per year of particulate emissions versus the same development built in a growth area (level 1,2 or 3).*



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# COMBATING SPRAWL

## WALKABLE, COMPACT, TRANSIT-FRIENDLY COMMUNITIES.

Well-designed, compact communities where people can walk to school, work, stores, parks, and restaurants can significantly reduce the need to drive.



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# COMBATING SPRAWL

## SAFE PEDESTRIAN PATHS AND BIKE LANES.

Safe routes to bike and walk make healthier communities by encouraging daily physical activity.

## EFFICIENT PUBLIC TRANSPORTATION SYSTEMS.

Buses and trains that run frequently, on time, reach more communities, and are affordable, will offer more alternatives to driving.



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**CLEAN AIR  
DEPENDS ON  
YOU  
DEPEND ON  
CLEAN AIR**

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# EMISSION REDUCTION STRATEGIES

*Require Energy Star efficiencies in all new residential projects.*



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# EMISSION REDUCTION STRATEGIES

ENERGY STAR qualified homes are 15% more efficient than the State energy code. The efficiencies are typically achieved through a combination of:

- high performance windows,
- controlled air infiltration,
- upgraded heating and A/C systems,
- building envelope upgrades,
- tight duct systems and upgraded water-heating equipment.



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# EMISSION REDUCTION STRATEGIES

Other emission reduction strategies:

- Geothermal and photo voltaic energy options should be offered
- Construction vehicles with retrofitted diesel engines should be used
- Homebuilder offer a lawnmower exchange program for new occupants



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# PROPER LAND USE DESIGN CONSERVES THE LAND AND THE AIR

Sprawl has detrimental air quality impacts. The correlation between increasing VMT with increasing vehicle emissions can be directly attributed to sprawl. The State should be promoting denser, mixed-use developments.



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# QUESTIONS OR COMMENTS?

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