2014 NATA Summary of Results

Overview

On August 22, 2018, the U.S. Environmental Protection Agency (EPA) released the sixth National Air Toxics Assessment (NATA). NATA provides information on potential health risks from breathing air toxics, also known as hazardous air pollutants.

NATA is a screening tool, used to help EPA and state, local and tribal air agencies find out if areas, pollutants or types of pollution sources need to be looked at further to better understand risks to public health. NATA provides broad estimates of the risk of developing cancer and serious noncancer health effects over census tracts across the country. It does not estimate any person's individual risk.

This NATA is based on emissions of air toxics for the calendar year 2014. It includes exposure estimates for 180 air toxics that EPA regulates under the Clean Air Act, calculating cancer risk and noncancer health effect estimates for about 140 of these. It also estimates exposure and noncancer health effects for diesel particulate matter.

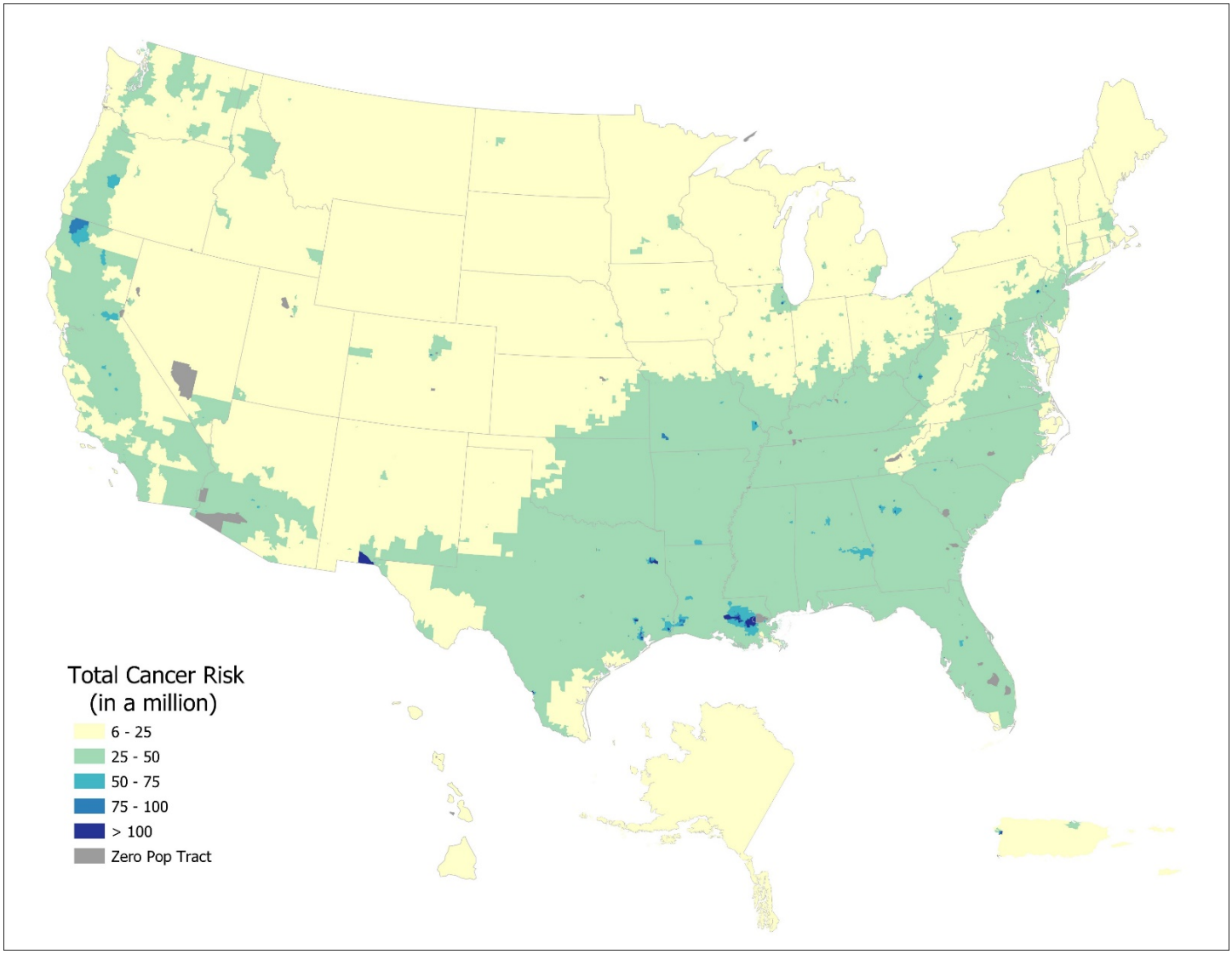
For more details on NATA, please review the 2014 NATA Fact Sheet. You can also learn more at the NATA website, online at https://www.epa.gov/nata.

National Results

The 2014 NATA estimates that the nationwide average cancer risk from breathing air toxics is 30 in 1 million. This means that, on average, about 30 people per 1 million would develop cancer if they breathe air with 2014 levels of air toxics over a lifetime of 70 years. This risk would be in addition to the cancer risk a person would have without being exposed to air toxics. This is a national average – some areas of the country have lower risks, and some have higher risks.

About half of that nationwide average risk comes from formaldehyde. This air toxic comes mostly from other pollutants that chemically react in the air. This is known as secondary formation. Emissions from industries, mobile sources, and natural sources combine in this way. The rest of the nationwide cancer risk comes mostly from pollution that is directly emitted to the air. We'll go into more detail on how we determine which pollutants drive health risks later in this summary.

The map below shows NATA's estimate of cancer risks from air toxics across the country. Lighter colors indicate lower estimated risks. Darker colors show areas where NATA estimates relatively higher risks.



U.S. cancer risks from air toxics as estimated by the 2014 NATA.

Local Results

While the national results above help EPA describe general trends from air toxics, NATA can also help us identify local areas we may need to look at closer to better understand risks. The 2014 NATA does show some local areas that may have elevated risks of cancer from air toxics.

NATA presents results at a local geographic level called a census tract. Census tracts are small subdivisions of a county or parish that represent about 4,000 people. NATA estimates that a few census tracts have a cancer risk from air toxics of 100 in 1 million or higher. Less than 1 percent of all census tracts in the country show these levels. Industrial emissions of three pollutants – ethylene oxide, chloroprene and coke oven emissions – contribute to most of the risk in these tracts. The NATA Fact Sheet and a special EPA ethylene oxide website have more information on local risks. These also describe how best to interpret NATA results at these local levels.

To quickly find out what cancer risk and noncancer health effects the 2014 NATA estimates for your area, you can use the NATA Map app. The map app's search tool lets you "zoom" to places of interest anywhere in the country. You can click on the map to display risks, emissions and other NATA data and results.

Identifying NATA's Risk Drivers

EPA uses several measures to determine which pollutants may contribute most to long-term cancer risks and noncancer health hazards, both nationally and regionally (for example, in certain metropolitan areas). This information helps EPA and state, local and tribal air agencies to better understand which pollutants and sources of pollution that we may need to look at more closely. For example, if a certain important air toxic comes mostly from vehicles, this may mean we need to look closer at how to control these vehicle emissions.

To do this, we define "drivers" of risk – pollutants that contribute most to risks and hazards – and "contributors" – pollutants that may also have an impact but are generally less important at these scales, nationally and regionally, than drivers. To classify risk drivers and contributors, we use the criteria shown in the following table.

2014 NATA Health Effects Drivers and Contributors

Risk Characterization Category	Cancer Risk Exceeds *(in 1 million)*[1]	Hazard Index[2]	Number of People (or Greater) Exposed *(in millions)*
National Cancer Driver	10		25
Regional Cancer Driver	10		1
Regional Cancer Driver	100		0.01
National Cancer Contributor	1		25
Regional Cancer Contributor	1		1
National Noncancer Driver		> 1	25
Regional Noncancer Driver		> 1	0.01

[1] *Cancer risks are upper-bound lifetime cancer risks (i.e., a plausible upper limit to the true probability that a person will contract cancer over a 70-year lifetime from a given hazard (such as exposure to a toxic chemical).*

[2] *A hazard index of 1 or lower means adverse noncancer effects are unlikely. You can read more about hazard indexes and how they are calculated on the NATA website.*

Using these guidelines, we can list the air toxics that show up as drivers and contributors to cancer risks and noncancer health hazards in the 2014 NATA:

- **National cancer risk driver**: formaldehyde
- **Regional cancer risk drivers**: ethylene oxide, chloroprene
- **National cancer risk contributors**: 1,3-butadiene, acetaldehyde, benzene, carbon tetrachloride, naphthalene
- **Regional cancer risk contributors**: 1,4-dichlorobenzene, arsenic compounds, chromium VI compounds, coke oven emissions, ethylbenzene

- **National noncancer hazard drivers**: None
- **Regional noncancer hazard drivers**: chlorine, hexamethylene diisocyanate

To learn about the health effects of these air toxics, please visit EPA's Health Effects Notebook for Hazardous Air Pollutants. This website presents fact sheets for these and all other hazardous air pollutants specified in the Clean Air Act.

How EPA Uses NATA Results

As noted above, we designed NATA as a screening tool. This means that EPA does not use NATA results as the only source of information on whether any particular place has – or does not have – unacceptable risks from air toxics.

Instead, we intend NATA results to be a place to start looking at possible risks from air toxics. NATA helps EPA and our partner air agencies at the state, local and tribal levels identify which pollutants, emissions sources and places we may need to study in more detail.

What NATA tells us about national and regional pollutant drivers and contributors helps in this focus. We look at ways we can broadly reduce emissions of national-level drivers and contributors. Regional drivers may help call attention to more localized air issues.

How You and Your Community Can Use NATA Results

NATA can help you learn which air toxics and sources of these emissions may be of concern to you and your community. You can also use NATA results to open a dialogue about air toxics in your community. You may wish to contact your state, local or tribal air agency with any questions or concerns you have about NATA results. These agencies usually set and enforce local air toxics rules. Often, they also carry out any localized air quality studies needed to get a more precise picture of the air quality in an area. Depending on the source, location and pollutant of interest, these local assessments may include updated emissions information, local weather data, actual measurements of air toxics, and other data that's more detailed than NATA's broad, national scale allows us to include.