99 NATA Exercise

1. Use the 1999 U.S. Risk Maps that are available under 1999 Estimated Risk Results on the 99 NATA Results webpage. County Level and Census Tract Level Risk maps are available for cancer risk, noncancer hazard respiratory, and noncancer hazard neurological.

Identify areas with the highest cancer and noncancer risks in your region and state. Compare county and census tract map results.

2. Use the Interactive State Maps that are available under 1999 Estimated Risk Results on the 99 NATA Results webpage.

Using the legend on the county cancer map, what is the highest risk (in a million) across the counties in your state and what counties have the highest risk in your state?

Using the legend on the county noncancer respiratory map, what is the highest risk (in a million) across the counties in your state and what counties have the highest risk in your state?

Using the legend on the county noncancer neurological map, what is the highest risk (in a million) across the counties in your state and what counties have the highest risk in your state?

3. On the 1999 Results webpage, click on the data tables link under the 1999 Estimated Risk section. Under the State Summary Databases Section, download your state's summary data. Open the Risk folder. Use the results from #1 that identified counties of interest in your state with the highest cancer risk, noncancer neurological risk, and noncancer respiratory risk. Compare the map results to the data contained in the risk files.

Use the County Risk file and complete Table 1. For each type of risk (cancer, noncancer respiratory, noncancer neurological) answer the following questions. (In order to evaluate an individual state, filter the state name and then sort from largest to smallest total risk.)

What county has the highest risk?
What is the total risk for the county (in a million)?
What is the population of the county?
What pollutant is the largest contributor to the total risk?
What is the risk of the pollutant with the highest contribution to risk in the county?

Table 1. County Risk

	Cancer Risk	**Noncancer Respiratory Risk**	**Noncancer Neurological Risk**
County with Highest Average Risk			
Total County Risk			
County Population			
Pollutant with highest contribution to average risk in the county:			
Pollutant Name			
Risk			

Use the Census Tract Risk File and complete Table 2. For each type of risk (cancer, noncancer respiratory, and noncancer neurological) answer the following questions. (In order to evaluate a state's census tracts, sort from highest to lowest total risk.)

What census tract has the highest risk?
What is the total risk for the census tract (in a million)?
What county is this tract in?
What is the population of the tract?
What source sector (major, area and other, onroad, or nonroad) contributes most to the risk in this tract?
What is the risk of the HAP with the highest contribution to risk in the tract?

Table 2. Tract Level Risk

	Cancer Risk	**Noncancer Respiratory Risk**	**Noncancer Neurological Risk**
Tract ID with Highest Average Risk			
Total Tract Risk			
County Containing Tract with Highest Risk			
Tract Population			
Source Sector with Highest Contribution to Risk in Tract			
Pollutant with highest contribution to average risk in the tract:			
Pollutant Name			
Risk			

Use the Census Tract Risk File to complete Table 3. For each type of risk (cancer, noncancer respiratory, noncancer neurological), answer the following questions. (In order to evaluate individual source sectors, sort the sector from highest to lowest risk.)

For each of the five sectors (major, area and other, onroad, nonroad, and background):

What census tract ID has the highest contribution?
What county is the tract in?
What HAP has the highest risk for this tract?

Table 3. Source Sector Contribution to Tract Level Risk

Source Sector	Cancer Risk	Noncancer Respiratory Risk	Noncancer Neurological Risk
Major			
Tract ID with highest risk:			
County of Tract ID:			
Pollutant with highest contribution to risk in tract:			
Area and Other			
Tract ID with highest risk:			
County of Tract ID:			
Pollutant with highest contribution to risk in tract:			
Onroad			
Tract ID with highest risk:			
County of Tract ID:			
Pollutant with highest contribution to risk in tract:			
Nonroad			
Tract ID with highest risk:			
County of Tract ID:			
Pollutant with highest contribution to risk in tract:			
Background			
Tract ID with highest risk:			
County of Tract ID:			
Pollutant with highest contribution to risk in tract:			

4. Open the CAA Num Reference for Pollutants file. Use results in Table 2 and the CAA Num Reference for Pollutants file to identify the CAA_num for each of the pollutants you identified in Table 2.

Table 4. CAA Num References

	Cancer Risk	Noncancer Respiratory Risk	Noncancer Neurological Risk
Pollutant Name			
CAA_num			

5. Open the All_HAPS_Models file in the All Tracts Models folder. Use information in Table 2, the CAA_Num identified in Table 4, and the ALL_HAPS_Model file to complete Table 5. For each pollutant found to be the biggest contributor to risk (cancer, noncancer respiratory, noncancer neurological), answer the following questions. (In order to evaluate individual tracts, filter by tract id, and then search by CAA_Num.)
   - What is the ASPEN concentration for the pollutant in the tract?
   - What source sector (major, area and other, onroad, nonroad) contributes the most to the total ASPEN concentration?
   - What is the ASPEN concentration in the source sector?
   - What is the Background ASPEN concentration for the tract?

Table 5. ASPEN Tract Level Results

	Cancer Risk HAP	Noncancer Respiratory Risk HAP	Noncancer Neurological Risk HAP
Pollutant (from Table 4)			
Pollutant Name:			
Pollutant CAA Num:			
Tract (from Table 2)			
Tract ID with highest risk:			
County:			
Tract population:			
ASPEN			
Total Concentration:			
Source Sector with highest concentration:			
Sector concentration:			
Background concentration:			

6. Open the EMSHAP Processed Emissions file. EMSHAP data are presented at the county level. Use results from Table 5 and the EMSHAP data to complete Table 6. For each type of risk (cancer, noncancer neurological, and noncancer respiratory), answer the following questions. (In order to evaluate an individual pollutant, click on the pollutant name and filter.)

- From Table 5, identify the counties with the highest risk
- From Table 5, identify the pollutant that contributes the most to the risk.
- Open the state EMSHAP table. What is the total county processed emissions for this pollutant?
- Open the national EMSHAP table. What are the total national processed emissions for this pollutant?
- Compare the county processed emissions to the national processed emissions. What percentage of the national emissions does the county have for this pollutant?
- What sector has the highest emissions of this pollutant in the county?
- What are the source sector emissions of this pollutant in the county?
- What pollutant has the highest emissions in the county? Is this the same pollutant as the highest risk pollutant?

Table 6. EMSHAP Processed Emissions

	Cancer Risk HAP	**Noncancer Respiratory Risk HAP**	**Noncancer Neurological Risk HAP**
County (Table 5):			
Pollutant with highest risk (Table 5):			
Total County emissions (tpy):			
Total National emissions (tpy):			
% County pollutant emissions of National pollutant emissions:			
County Source Sector emissions			
Major:			
Area and Other:			
Onroad:			
Nonroad:			
Source sector with largest county emissions of high risk pollutant			
Source sector:			
Source sector emissions:			
% source sector emissions of total county emissions:			
Pollutant with highest emissions in the county			
Pollutant name:			
Total County emissions (tpy):			

Examine how POM and Chromium are grouped in the EMSHAP table.

- **What POM pollutant categories are included in EMSHAP table?**

- **What Chromium pollutant categories are included in EMSHAP table?**

6. Open the NEI Summary files and NEI Lookup table.
   Use results from #5 and the NEI data. For each type of risk (cancer, noncancer neurological, and noncancer respiratory), answer the following questions.

   ***If compound groups are identified as pollutants of concern for risk, you will need to compare NEI pollutants and emissions to the EMSHAP processed pollutants and emissions.

   Complete Table 7 by answering the following questions.

   - From Table 6, identify counties with highest risk. Open the NEI Lookup Table (STATECNTYFIPS code) and identify State and County FIPS of the counties.

   - From Table 6, identify pollutant that contributes to the highest risk in the county. Open the NEI Lookup Table (Pollutant Code – HAPS) and identify HAP Category Name in the NEI for the EMSHAP pollutant. Look at the individual pollutants that are reported in the NEI that are part of the HAP Category.

   - Open the County Summary Table (County-state abbreviation) in the state NEI file.
     What are the total county NEI emissions for the pollutant?
     What are the source sector emissions?
     Which source sector has the highest emissions for the county?

   - Open the Source Category Summary Table (Source-state abbreviation) in the state NEI file.
     What source category and sector (major, area, onroad and nonroad) contributes the highest emissions of the pollutant in the county?
     For area sources, is the source category in the point, nonpoint, or both sectors of the inventory?
     For point sources, identify the MACT code or identify the SIC Code.
     For nonpoint sources, identify the MACT Code if present.

Table 7. NEI County Emissions Summary

	Cancer Risk HAP	Noncancer Respiratory Risk HAP	Noncancer Neurological Risk HAP
County			
County Name (Table 6):			
State and County FIPS Code:			
Pollutant with highest risk			
Pollutant Name in EMSHAP (Table 6):			
NEI HAP Category Name:			
Individual Pollutants in HAP Category:			
County Emissions Summary			
Total County NEI emissions (tpy):			
Major source emissions (tpy):			
Area source emissions (tpy):			
Onroad source emissions (tpy):			
Nonroad source emissions (tpy):			
Source sector with largest county emissions:			
Source Category Summary for category with largest county emissions			
Source Category Name:			
Total emissions(tpy):			
Major source emissions (tpy):			
Area emissions (tpy):			
Area point emissions (tpy):			
Area nonpoint emissions (tpy):			
Mobile Onroad emissions (tpy):			
Mobile Nonroad emissions (tpy):			
MACT code:			
SIC code:			

For each type of risk, answer the following questions.

a. If the sector with the largest contribution is **point**, open the Point Facility file first.

What facility in the county has the largest contribution of the pollutant?

What is the NTI Unique Facility ID?

What are the Data sources?

What MACT codes and categories at the facility are associated with the pollutant?

Now open the Point Stack file. Using the NTI Unique Facility ID from the Point Facility Table, find data for the facility. Each facility has the following IDs: NTI Unique Facility ID, Site ID, Unit ID, Process ID and Emission Release Point ID.

Which emission release point ID (stack or fugitive) within the facility has the largest emissions of the pollutant?

What is the Data Source?

Are any stack parameters defaulted for the stack?

Are any location coordinates defaulted? Are any defaulted to the county centroid?

Are emissions controlled?

Is the facility a major or area source (source type)?

Identify SCCs and SCC descriptions for the emission release point ID with largest emissions of the pollutant in the facility.

If the pollutant is a compound group, identify individual HAPs reported for the HAP category.

b. If the sector with largest contribution is **nonpoint**, open the Nonpoint file.

Identify source categories of this pollutant for the county.

What source category in the county has the largest contribution of the pollutant?

What is the SCC code of the source category with the largest contribution?

Identify MACT codes for this category if any.

c. If the sector is **mobile onroad**, open the Mobile Onroad file.

What are the onroad categories in the county for the pollutant?

What onroad category has the largest emissions of the pollutant?

d. If the sector is **mobile nonroad**, open the Mobile Nonroad file.

What are the nonroad categories in the county for the pollutant?

What nonroad category has the largest emissions of the pollutant?

7. **From your analysis, explain the results of your analysis in steps 1 – 6**. For example, are the results based on assumptions made about compound groups or is risk based on assumptions made about background concentration? Is there a problem with the inventory or are results based on model assumptions about transport of pollutants from other tracts? What do you recommend as the next steps you should undertake to explain the NATA maps to your management or to the public?