

PROGRAM:

```
import pandas as pd

import matplotlib.pyplot as plt

import seaborn as sns


# Load the air quality dataset

df = pd.read_csv('tn.csv')


city_avg = df.groupby('City/Town/Village/Area')[['SO2', 'NO2', 'RSPM/PM10']].mean()


# Create bar plots to visualize average pollutant levels by monitoring station

plt.figure(figsize=(12, 6))

plt.subplot(131)

average_so2.plot(kind='bar', color='skyblue')

plt.title('Average SO2 Levels by Station')

plt.xlabel('Monitoring Station')

plt.ylabel('Average SO2 Level')


plt.subplot(132)

average_no2.plot(kind='bar', color='lightcoral')

plt.title('Average NO2 Levels by Station')

plt.xlabel('Monitoring Station')

plt.ylabel('Average NO2 Level')


plt.subplot(133)

average_rspm.plot(kind='bar', color='lightgreen')

plt.title('Average RSPM/PM10 Levels by Station')

plt.xlabel('Monitoring Station')
```

```
plt.ylabel('Average RSPM/PM10 Level')
```

```
plt.tight_layout()
```

```
plt.show()
```

```
# Calculate the average pollutant levels by city or area
```

```
average_city_so2 = df.groupby('City/Town/Village/Area')['SO2'].mean()
```

```
average_city_no2 = df.groupby('City/Town/Village/Area')['NO2'].mean()
```

```
average_city_rspm = df.groupby('City/Town/Village/Area')['RSPM/PM10'].mean()
```

```
# Create bar plots to visualize average pollutant levels by city or area
```

```
plt.figure(figsize=(12, 6))
```

```
plt.subplot(131)
```

```
average_city_so2.plot(kind='bar', color='skyblue')
```

```
plt.title('Average SO2 Levels by City')
```

```
plt.xlabel('City')
```

```
plt.ylabel('Average SO2 Level')
```

```
plt.subplot(132)
```

```
average_city_no2.plot(kind='bar', color='lightcoral')
```

```
plt.title('Average NO2 Levels by City')
```

```
plt.xlabel('City')
```

```
plt.ylabel('Average NO2 Level')
```

```
plt.subplot(133)
```

```
average_city_rspm.plot(kind='bar', color='lightgreen')
```

```
plt.title('Average RSPM/PM10 Levels by City')
```

```
plt.xlabel('City')
```

```
plt.ylabel('Average RSPM/PM10 Level')
```

```
plt.tight_layout()

plt.show()
```

OUTPUT:

Calculate average SO2, NO2, and RSPM/PM10 levels across different monitoring stations, cities, or areas. Identify pollution trends and areas with high pollution levels.

	SO2	NO2	RSPM/PM10
City/Town/Village/Area			
Chennai	13.014042	22.088442	58.998000
Coimbatore	4.541096	25.325342	49.217241
Cuddalore	8.965986	19.710884	61.881757
Madurai	13.319728	25.768707	45.724490
Mettur	8.429268	23.185366	52.721951
Salem	8.114504	28.664122	62.954198
Thoothukudi	12.989691	18.512027	83.458904
Trichy	15.293956	18.695055	85.054496
Cities with high RSPM/PM10 levels:			
Empty DataFrame			
Columns: [SO2, NO2, RSPM/PM10]			
Index: []			

Create visualizations using data visualization libraries (e.g., Matplotlib, Seaborn).

