

Environment and Epidemic:

Ozone and Asthma in Qatar

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Societal Changes and Disease Prevalence



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Disease Evolution and the Environment

- Transmissable
- Non-transmissable

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What is the "Environment"?

- Physical
- Social and Cultural
- Built environment



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Air Quality



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Water Quality



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Waste Management



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Asthma in Qatari Children

- 19.8% asthma in Qataris
 - 81% < 5 years
- 35% asthma hospitalizations <15 years
- 70% of asthma hospitalizations Qataris
- Greater school absences



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Contributing Factors

- Genetic component
- Environmental component

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Ozone and Asthma

- Low levels can trigger an emergency event
- Ozone increases onset
- Ozone increases emergency events > $PM_{2.5}$
- 50ppb increases symptoms by 35–47%
 - Gent et. al. (2003) JAMA

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Primary Air Pollutants



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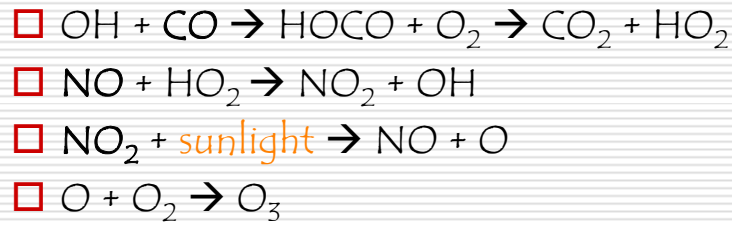


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Ozone Production



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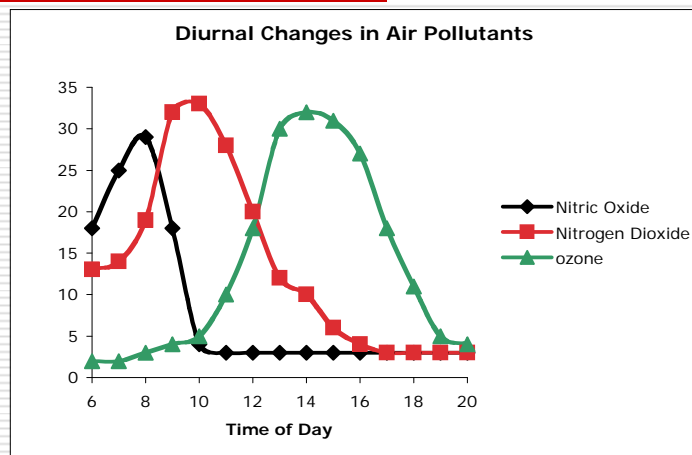


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Secondary Pollutant Production



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Contributing Factors to Ozone Formation

- Hot
- Sunny
- Dry
- Motor Vehicles

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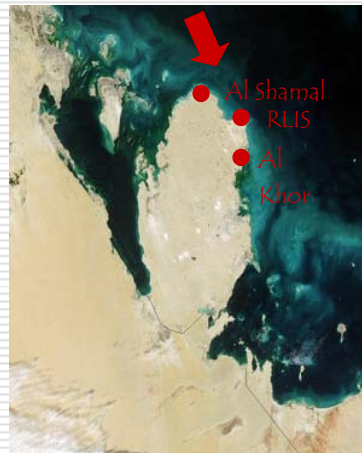
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What are the Risks?

- Ras Laffan Industrial Site
- Al Khor
- Value from Al Shamal



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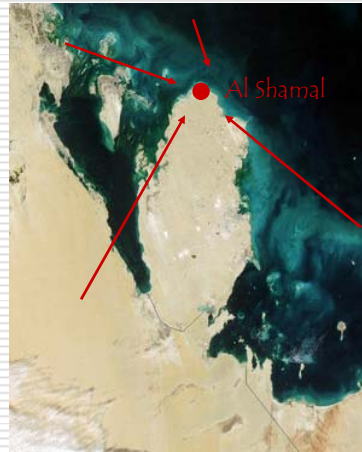
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Risks may be Regional

- Regional Industry



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Proactive versus Reactive

- Ozone warnings
- Particulate matter warnings
- Identify susceptible populations
- Dietary supplements
- Control overgrazing
- Promoting public transportation
- Post ozone event preparedness

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Solutions Require Cooperation



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