



# Causes of Excessive Oxides of Nitrogen Nox

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1. **Cooling system problems**
  - Insufficient radiator airflow
  - Low coolant level
  - Poor cooling fan operation
  - Thermostat stuck closed or restricted
  - Internal radiator restriction
  
2. **Excessive lean air/fuel mixture**
  - Leaking intake manifold gasket
  - Worn throttle shaft
  
3. **Closed loop control system incorrectly shifted lean**
  
4. **Improper oxygen sensor operation**
  - Slow rich to lean
  - Rich biased O<sub>2</sub> sensor voltage
  
5. **Improper operation of EGR system**
  - Restricted EGR passages
  - EGR valve inoperative (mechanical or electrical)
  - Leaking misrouted EGR hoses
  - Vehicle not in closed loop
  - EGR solenoid inoperative
  
6. **Carbon deposits**
  - Intake valve deposits
  - Top of piston (increased compression)