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• AOD® Urea Hydrolysis Systems
• Flue Gas Conditioning (FGC)
• Fuel Control Valve Trains
• Custom Industrial Equipment
• Thermocouple Arrays
• Tubular & Duct Immersion Electric Heaters
• Rental Units / Aftermarket
• Formaldehyde-free Urea

CONTACT US (714) 979-7300

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Ammonia - The Hazards

Ammonia is typically used as a chemical agent for the reduction of nitrous oxide emissions (NOx).

Anhydrous ammonia is a highly toxic chemical (subject to EPA, DOT, OSHA, and Dept. of Homeland Security regulations), which is typically stored in pressure vessels (rated to 300 psig) as a liquidified-gas. There are significant risks and liability associated with its transport, unloading, and bulk storage.

For example, several trucks or railcars must be unloaded each day, so the potential risk is on-going. The resulting bulk storage requirement presents a significant hazard. In the event of a major storage tank failure, an ammonia aerosol cloud will form and travel several miles - with the potential to be immediately lethal.

It should be noted - aqueous ammonia, although less concentrated than anhydrous ammonia, poses similar risks and is increasingly subject to stricter regulations by local authorities.

### Ammonia Exposure Effects

<table>
<thead>
<tr>
<th>Severity of Effect</th>
<th>Exposure Concentration</th>
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<tbody>
<tr>
<td>Readily detectable odor</td>
<td>20 - 50 ppm</td>
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<tr>
<td>Severe irritation of eyes, ears, nose, and throat; No lasting effect with short-term exposure</td>
<td>400 - 700 ppm</td>
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<tr>
<td>Dangerous, less than 1/2 hour exposure may be fatal</td>
<td>2,000 - 3,000 ppm</td>
</tr>
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<td>Serious edema, strangulation, asphyxia, rapidly fatal</td>
<td>5,000 - 10,000 ppm</td>
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New Regulations

New regulations require many industrial boilers and commercial combustion processes to be equipped with Selective Catalytic Reduction (SCR) of Nitrous Oxide Emissions. The SCR process typically utilizes injection of ammonia upstream of a catalyst to reduce the emissions to elemental nitrogen. However, anhydrous ammonia, and to a lesser extent, aqueous ammonia, are highly toxic. To avoid the hazards of storage and handling of ammonia, many SCR systems utilize technology to convert non-toxic urea to ammonia on demand.

A Safe Alternative: AOD®

For small applications up to approximately 40 pounds/hr of ammonia, Wahlco has developed a more cost effective urea to ammonia system under the trademark: AOD® (Ammonia on Demand). This patented technology offers a small packaged unit complete with urea feed pump, controls, ammonia production, and heated dilution air. All of the components are installed on a small skid base to enable quick and easy installation. Wahlco can also supply truck unloading, storage tanks, forwarding pumps and blow back tanks to complete your installation.

### Product Description

- Sized for up to 40 lb/hr of ammonia
- Product gas is 5% ammonia maximum by volume
- Ammonia delivery/discharge time from hot stand-by: 3 minutes
- Utilities:
  - Electric power: 480VAC, 3-phase, 60 Hz, 25 to 90 KW
    - Instrument air: 3 cfm at 85 psig
- Noise level: less than 85 dBA

AOD® Process Description

In the AOD® process, urea solution of 32.5% to 40% Diesel Exhaust Fluid (DEF) is supplied from a small feed tank to a reactor and heated under pressure to produce a product gas stream of ammonia, carbon dioxide, and water vapor. The product gas is then mixed with heated air supplied from an electric heater on the unit and routed to the injection grid upstream of the SCR unit.

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### Fully Automated Control by PLC or Plant DCS

AOD® Skid Mounted System

![AOD® Skid Mounted System](image-url)

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### Product Description

The skid mounted AOD® System has the following specifications:

- **Skid dimensions**: from 8’ to 9’ L x 4.5’ to 5.5’ W x 7’ to 8’ H (depending upon capacity)
- **Dry weight**: 4,000 to 6,000 lb
- **Operating weight**: 5,200 to 7,500 lb
- **Heat transfer oil shipped separately in drums**: approximately 130 gal

### Product Performance

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Leader in Ammonia Technology

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• Airports
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• Correctional facilities
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• Hotels / resorts
• Laundry / dry cleaning facilities
• Oil and gas
• Power producers
• Pulp and paper
• Universities

Ammonia On Demand
The Safest Process for DeNOx


Wahlco Headquarters in Santa Ana, California
Corporate offices, engineering, fabrication, testing and field service

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