

# **GAS DETECTION SOLUTIONS FOR AMMONIA APPLICATIONS**

How to Protect the Ammonia Economy with Gas Detection



**Honeywell**

# AMMONIA: USES, RISKS & IMPACT

Ammonia is one of the most commonly produced chemicals in the world and is used as a carbon-free energy carrier (H<sub>2</sub>) in agriculture and as a chemical precursor.



## AMMONIA'S RISING DEMAND

Ammonia (NH<sub>3</sub>) is crucial in agriculture, industry, and energy, with demand set to rise due to its diverse applications. As global food needs grow, ammonia-based fertilizers will drive agricultural demand. Its role in producing chemicals like urea and nitric acid will further boost industrial use. In energy, ammonia is gaining traction as a hydrogen carrier and fuel source, supporting sustainability efforts. Additionally, its use in reducing greenhouse gas emissions through selective catalytic reduction (SCR) is expanding. With increasing regulatory and environmental focus, ammonia's significance in the global economy will continue to grow.<sup>1</sup>

1. <https://www.sciencedirect.com/science/article/abs/pii/S0196890423012153>

## POTENTIAL RISK HAZARDS OF AMMONIA

- Toxic 
- Explosive 
- Corrosive 
- Environmental 

# SUPPLY CHAIN OF AMMONIA

## Reliable Honeywell gas detection solutions for every stage of the ammonia supply chain\*

### AMMONIA PRODUCTION

Ammonia production, primarily via the Haber-Bosch method, synthesizes  $NH_3$  from nitrogen and hydrogen. It poses hazards, including hydrogen's flammability, nitrogen's asphyxiation risk, and ammonia's toxicity, which can cause severe respiratory issues and chemical burns if not contained.<sup>2</sup>

### AMMONIA TERMINALS

Terminals are critical infrastructures in the global supply chain of Ammonia. These terminals serve as key points for the safe storage, handling, and transportation of  $NH_3$ , ensuring a steady supply to various industries.

### Storage

Ammonia terminals feature specialized storage tanks that safely hold ammonia

at low temperatures and high pressures, using corrosion-resistant materials to ensure product integrity.

### Loading and unloading

Terminals use pipelines, pumps, and metering systems to safely and efficiently transfer ammonia between storage, transport vessels, and distribution networks.

### Transportation

Ammonia terminals are strategically located near ports, railways, and highways, serving as key hubs for distributing ammonia to industrial, agricultural, and energy destinations.

### GAS PROCESSING AND REFINING

Processing and refining are the methods and procedures used to purify raw materials and

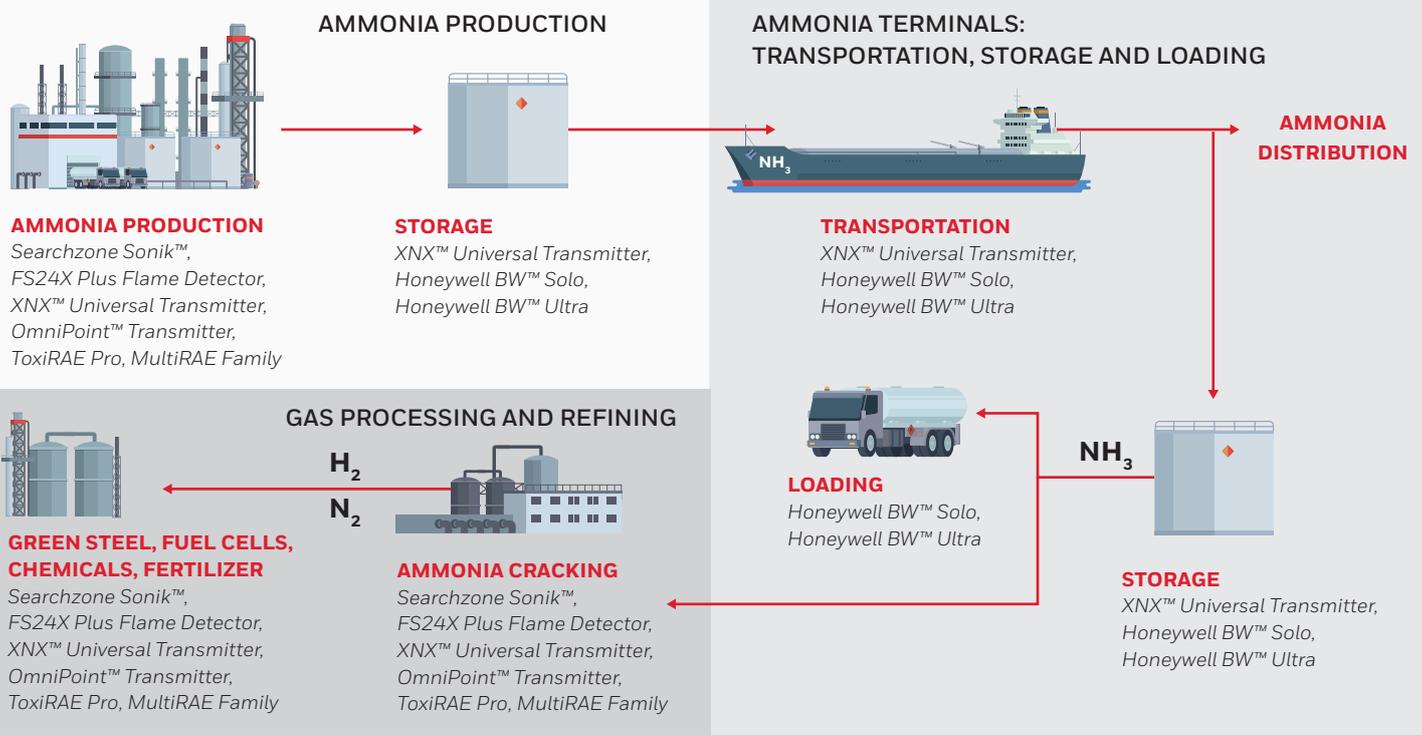
convert them into valuable, usable products. The production facilities must have gas and flame detection to manage these risks.

### SAFETY

Overall safety is paramount in ammonia terminals and also in the product due to the hazardous nature of ammonia. Gas and flame detection systems are in place to protect personnel, equipment, and the environment.<sup>3</sup>

2. [https://en.wikipedia.org/wiki/Haber\\_process](https://en.wikipedia.org/wiki/Haber_process)

3. <https://ammoniaenergy.org/presentations/ammonia-terminal-in-port-areas-safety-and-image-issues-in-storage-throughput-and-transport/>



\*Needs may vary from project to project. Please discuss the specific requirements with the user before offering the solution.



# PORTABLE GAS DETECTION

Honeywell detectors help to quickly identify ammonia leaks, enabling prompt action to prevent exposure, equipment damage, and potential hazards. Their rugged design, long battery life, and user-friendly interface increase reliability of performance in demanding conditions, making them essential to help maintaining safety and regulatory compliance in ammonia-related operations.



**ToxiRAE Pro**

- A wireless, personal single-gas monitor to monitor a full range of common toxic industrial chemicals, volatile organic compounds, combustible gases, carbon dioxide, and Oxygen



**MultiRAE Family**

- An advanced portable chemical detector with the flexibility of up to six gas sensors and the convenience of wireless portability. It offers the flexibility to swap out 25 different sensors



**Honeywell BW™ Solo**

- An easy-to-service single-gas detector with BLE connectivity that provides real-time visibility into the status and safety of hazardous-area workers



**Honeywell BW™ Ultra**

- A five-gas detector designed specifically for sampling and monitoring confined spaces, before and after entry. It offers advanced sensor technology, great visibility on gas readings, comfort and BLE connectivity

# FIXED GAS DETECTION

Honeywell fixed detectors deliver real-time data, triggering alarms and automated responses to help mitigating hazards before they escalate. Integrated with building management and safety systems, they enhance operational efficiency while protecting personnel and assets. With robust design and reliable performance, Honeywell fixed gas detection solutions are a critical component in ammonia safety management.



**FS24X Plus Flame Detector**

- Advanced triple IR Flame detector for Hydrocarbon and Hydrogen fires in one device, even in harsh environmental conditions



**XNX™ Universal Transmitter**

- Universal transmitter with single sensor for toxic, oxygen or combustible gas detection. Supports a wide range of sensors on a common platform and offers a modular choice of inputs and outputs



**OmniPoint™ Transmitter**

- A comprehensive gas detection solution designed to operate in hazardous locations and supports up to three sensors in the detection of toxic gases, oxygen and flammable gas hazards



**Searchzone Sonik™**

- A robust and reliable gas leak detector that efficiently detects pressured gas leaks within its range. The solid-state sensor works in harsh environmental conditions with no need to calibrate

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