

N-HALAMINE PLATFORM — FREQUENTLY ASKED QUESTIONS (FAQ)

Persistent, Moisture-Activated Ammonia & Odor Control

Clean Engineered Chemistry — Zero Gimmicks

1. What is the N-halamine platform?

The N-halamine platform is a **surface-bound, moisture-activated oxidative chemistry system** designed to control **ammonia and odor at the point of formation**.

Unlike acids, bacteria, or fogged oxidizers, N-halamines function as **persistent oxidative reservoirs** that remain dormant when dry and activate **only when moisture triggers ammonia-forming events**.

2. What problem does this platform solve?

Ammonia and odor generation are **event-driven**, not continuous.

They occur when **moisture activates microbial and enzymatic pathways** that convert nitrogen compounds into NH_3 .

Most existing solutions:

- act continuously whether ammonia is present or not
- wash away or neutralize once
- require constant reapplication

The N-halamine platform solves this by **activating only when ammonia is being produced** and remaining inactive the rest of the time.

3. How is ammonia actually generated in animal systems?

Ammonia formation follows a predictable sequence:

1. Nitrogen is excreted as uric acid or urea
2. Moisture activates microbes
3. Enzymes (urease / uricase) convert nitrogen → NH₃
4. Ammonia volatilizes into air
5. Drying pauses the process
6. Re-wetting restarts it

Key insight: ammonia generation is **moisture-triggered and cyclical**.

4. How does the N-halamine chemistry work?

N-halamines are **surface-bound oxidative species** that:

- remain chemically stable when dry
- activate upon moisture exposure
- generate controlled, localized HOCl at the surface
- interrupt ammonia-forming microbial and enzymatic pathways

Because the chemistry is **anchored to surfaces or solids**, it does not behave like sprayed or fogged oxidizers.

5. Is this a disinfectant or sterilant?

No.

The N-halamine platform is **not intended to sterilize environments**.

It is **engineered residual chemistry** designed to **interrupt ammonia formation cycles at surfaces**, not to eliminate all microbes.

6. How is this different from acidifiers?

Acidifiers:

- lower pH to convert $\text{NH}_3 \rightarrow \text{NH}_4^+$
- are corrosive
- require heavy application rates
- provide one-shot chemistry with no reactivation

N-halamines:

- do not rely on pH control
 - are non-corrosive
 - remain surface-bound
 - activate repeatedly with moisture
 - can be recharged without replacement
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7. How is this different from bacterial additives?

Biological additives:

- depend on living organisms
- are sensitive to temperature and moisture
- act slowly
- often require frequent reapplication

N-halamines:

- are purely chemical
- function immediately upon activation
- are not temperature-dependent
- persist through wet/dry cycles

8. How is this different from ClO₂ or HOCl fogging?

Fogged oxidizers:

- act immediately but briefly
- do not bind to surfaces
- dissipate quickly
- provide no residual protection

N-halamines:

- are **surface-bound**
 - provide **persistent oxidative capacity**
 - activate locally
 - recharge with humidity or respray
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9. What does “surface-bound” mean in this context?

Surface-bound means the active chemistry is **anchored to physical substrates**, such as:

- bedding
- litter
- treated surfaces
- absorbent media
- coated solids (zeolite, SAP, blends)

This anchoring prevents rapid loss, wash-off, or volatilization.

10. What does “moisture-activated” mean?

Moisture-activated means the chemistry:

- remains dormant in dry conditions
- activates only when moisture is present
- responds directly to ammonia-forming events

This makes the system **event-driven**, not continuously reactive.

11. Is the N-halamine platform persistent?

Yes.

Persistence comes from:

- surface anchoring
- chemical stability in dry states
- controlled activation during wet states

The system does not “turn off” permanently after one use.

12. What does “rechargeable” mean?

Rechargeable means:

- oxidative capacity can be restored
- reactivation occurs via humidity or respray
- replacement of the substrate is not required

This reduces material use and operational cost.

13. What substrates can the N-halamine platform be deployed on?

The platform is **delivery-agnostic** and can be deployed as:

Aqueous Multi-Sprays

- bedding
- litter
- surfaces
- rubber, EVA, foam
- manure solids

Coated Solids

- zeolite
- SAP
- dual-phase litter blends
- absorbent media
- pods and sachets

Same chemistry. Different physical forms.

14. Where is the platform most valuable?

Primary use cases include:

Poultry & Egg Production

- broiler houses
- layer houses
- cage-free systems
- RMS and compost-based bedding
- high-moisture zones
- between-flock treatment

Pet & Small Animal Environments

- cat litter boxes
 - litter enhancers
 - crates and habitats
 - small-animal bedding
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15. Is the platform corrosive?

No.

The N-halamine platform is **non-acidic and non-corrosive**, unlike many traditional ammonia control treatments.

16. Does it require special equipment?

No.

Aqueous deployments are compatible with:

- standard spray equipment
- existing application practices

Coated solids integrate directly into existing systems.

17. Is this one product or multiple products?

It is a **platform**, not a single SKU.

The platform consists of:

- a core chemistry
 - multiple substrates
 - multiple deployment formats
 - scalable applications
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18. Why hasn't this existed before?

Historically, ammonia control relied on:

- pH manipulation
- airflow
- biology
- short-lived oxidizers

The concept of **surface-bound, moisture-activated, rechargeable oxidative chemistry** had not been implemented across these systems.

19. Why is timing important now?

Drivers include:

- cage-free mandates
 - worker safety scrutiny
 - environmental nitrogen pressure
 - rising energy costs for ventilation
 - demand for residue-free solutions
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20. What is the key takeaway?

The N-halamine platform changes ammonia control by:

- engineering chemistry onto the surface
- activating only when ammonia is formed
- persisting through cycles
- recharging without replacement

This is a structural change in how ammonia and odor are managed.
