Nitrosamine impurities

Background

Since 2018, high levels of nitrosamine impurities (probable human carcinogens after long-term, chronic exposure) have been found in commonly prescribed blood pressure medicines, antacids, diabetes drugs, anti-tuberculosis, and smoking cessation medicines. These impurities pose a risk to patients and have resulted in drug recalls that left millions without the treatments they depend on.

To protect patients, the FDA and other global regulatory agencies have issued public health alerts and guidance documents for manufacturers to assess and control the presence of nitrosamine impurities in medicines.

Opportunity to strengthen quality

Manufacturers must control nitrosamine impurities in drugs because unacceptably high levels can delay product approvals, trigger product recalls, and otherwise disrupt business operations, which can impact the availability of quality medicines for patients.

USP solutions

- Eight nitrosamine Reference Standards
  - N-Nitrosodimethylamine (NDMA)
  - Deutero *N*-Nitrosodimethylamine (NDMA-d6)
  - N-Nitrosodiethylamine (NDEA)
  - N-Nitrosodiisopropylamine (NDIPA)
  - N-Nitrosodibutylamine (NDBA)
  - N-Nitrosoethylisopropylamine (NEIPA)
  - N-Nitrosomethylaminobutyric acid (NMBA)
  - N-Nitrosomethylphenylamine (NMPA)
- General Chapter <1469> *Nitrosamine Impurities*
  - Provides guidance on assessing materials for nitrosamine presence, establishing control strategies, and ensuring the performance of analytical procedures to monitor nitrosamine levels in drug products
- Informational and instructional assets including webinars, workshops, round table discusions, surveys, tutorials, published articles, and education courses
- An online community, Nitrosamines Exchange, comprised of more than 1,000 active members who share real-time updates, learnings, challenges, and solutions with one another when it comes to the latest information about nitrosamine impurities.

Why it's important

Even small changes to pharmaceutical manufacturing processes risk introducing unsafe nitrosamine levels in medicines. Manufacturers can use USP solutions to detect and measure nitrosamines as well as verify the performance of their analytical procedures that monitor nitrosamine levels in their products. Detection, identification, and measurement enables manufacturers to control nitrosamine levels, as recommended by the regulators, protect patients, and reduce the likelihood of recalls and shortages. From a business perspective, it protects brand reputations and their bottom line.

USP solutions help regulators better understand nitrosamine impurities and consistently measure their levels and manage public health risk.

Web resources

- https://www.usp.org/chemical-medicines/nitrosamine-impurities
- https://www.usp.org/our-science/nitrosamine-impurities
- https://nitrosamines.usp.org/login
- https://store.usp.org/home