

zNose® Product Line

APPLICATIONS

zNose® detects contamination in a wide variety of industries:

Homeland Security, Food, Medical, Public Health / Environment, Energy, Agriculture, Beauty, Zoology

The zNose® product line includes portable, transportable and benchtop, low cost solid state detectors that use gas chromatography (GC) and Surface Acoustic Wave (SAW) to give complete profile of all kinds of odors and chemicals.

It can achieve part per billion level in near real time, typically 10 seconds, by combining SAW detectors with high-speed temperature programmed chromatographic columns, specificity over a wide range of vapors. Stable sensors are utilized that neither drift nor require constant calibration.

Its gas detection VOC capabilities can be applied to chemical analysis of air, water, and soil for odor management and remediation projects. Its Vapor Analysis System provides a quantifiable response to multiple types of explosives simultaneously.

The zNose® instruments can easily operate under field conditions by obtaining extracts of 2,4,6-trinitrotoluene (TNT), hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX), 2,4-dinitrotoluene (2,4-DNT) and 2,6-dinitrotoluene (2,6-DNT) from soil or water in minutes.

Speed and Accuracy of the zNose® Product Line:

zNose® is extremely fast and accurate. Gas chromatographs are able to produce a coherent 10 second spectrum of vapor pressure of chemicals present in any odor or fragrance.

The GC/SAW can speciate and quantify vapor concentrations of multiple types of explosive compounds with a 10 second analysis period.

For accurate soils measurements a solvent extraction of 2,4,6-trinitrotoluene (TNT), hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX), 2,4-dinitrotoluene (2,4-DNT) is used with direct injection

HOMELAND SECURITY



Explosives contamination in soil and water:

Our planet has seen catastrophic effects of 2 world wars and there are hundreds of explosives-contaminated sites located globally, containing lead, copper, arsenic, and nitro aromatic metabolites. Explosive contaminants and their derivatives have polluted our environment to levels that threaten the health of all living beings and the entire ecosystem.

Unexploded ordinance (UXO) from military operations worldwide, especially nuclear tests also pose a serious environmental threat due to release of toxic substances from corroding ordinance. In addition to the risks associated, these also possess a potential for accidental detonation.

Ingestion, inhalation, or dermal absorption of contaminated soil and water can lead to diseases like soil-transmitted helminth infections, cancer, hookworm disease, pododermatitis, congenital anomalies, impotency and other health risks.

The zNose rapidly screens for explosives contamination in soil and water at mg/kg and mg/l concentration level with stable sensors that neither drift nor require constant calibration.

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Port and Cargo Security

Incoming shipments are analyzed for potential threats using EST Inc.'s unique technology, zNose®. Explosives, narcotics, and other contraband are detected and identified upon homeland entry. Additional zNose® applications include:

- Searching cargo containers and vehicles for contraband
- Detecting hidden explosives and chemical weapons
- Detecting hidden bootleg liquor in cargo containers
- Recognizing the presence of illegal chemicals



Airport Security

zNose® monitors the ambient air chemistry within aircraft, recognizes odors from known threats, and detects suspicious odors, which are not part of the airplane's normal vapor signature. Also designed to:

- Screen departing passengers and luggage
- Complement existing screening technologies
- Screen and monitor facilities for chemical odors
- Monitor for improvised explosives and contraband



Building Security

zNose® monitors the air chemistry within buildings and compares it with the building's normal background signature. It recognizes the threatening odors and helps to keep the security at buildings intact. It also provides aid to:

- Screen and monitor public buildings and transportation facilities
- Analyze suspicious odors and hazardous industrial materials
- Provide sensitive and rapid warning for fixed sites such as, government buildings etc.
- Keep a check on ambient odor of subway stations, financial centers and high-value industries

ENERGY



Fuels

zNose® uses gas chromatography and SAW detector and is capable of testing any type of fuel and detects the contamination in a minute with speed, precision and accuracy. This unique technology also:

- Gives complete chemical composition of any type of fuel's chemical vapor
- Quickly detects mixing of octanes and blended fuels
- Detects any type of fuel contamination
- Produces olfactory images to give better understanding

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BEAUTY



Fragrance

zNose® tests any vaporized essence of fragrant compounds such as perfumes, lotions, soaps etc. within real time. It gives complete chemical composition of such compounds, helping in maintaining the required concentration levels. It also helps in:

- Comparing the chemical signature of perfumes
- Effectively classifying perfumes by fleur essence notes or olfactory images
- Helps in maintaining required concentration levels of fleur essence bases
- Giving complete chemical composition of fragrant oils and bases
- Detecting odor signatures of antiseptic soaps and lotion
- Quantitative quality control testing of soaps and lotions

ZOOLOGY



Animals

zNose® gives complete chemical profile of the animal odors with accuracy and speed.

- Testing odors to determine species
- Identifying the sex of different species by testing odors
- Giving reproductive status of animals

PUBLIC HEALTH / ENVIRONMENT



Animals

zNose® gives complete chemical profile of the animal odors with accuracy and speed.

- Detects harmful odors of different species that can spread diseases like swine flu, bird flu, etc.
- Determining the efficacy of reducing animal odors
- Detects harmful odors of different species such from feed lots, manure lagoons, etc.



Air Quality

zNose® sniffs the good and bad aroma of the atmosphere with its parts-per-trillion sensitivity using ultra-fast gas chromatography and SAW detector. It also helps in:

- Identifies the unhygienic odor of surroundings
- Sniffs the presence of contagious viruses in air

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Plastics

As all chemical substances have divergent odors, plastic also has its odor which could be detrimental. The advanced technology of the zNose® helps you by:

- Quantifying the concentration of volatile organic compounds in plastic odors
- Analyzing plastic odors in just a minute after the sample is injected in it
- Measuring the amount of impurities in plastic
- Identifying the recycled plastic by its odor

AGRICULTURE



Plants

zNose® with its advanced technology renders help to detect harmful emissions from the plants and keeps an analyzing eye on the quality of crops. It also helps by:

- Detecting levels of volatile emissions from plants
- Helps in performing greenhouse experiments
- Analyzing herbs; medicinal plants used to make herbal medicines
- Measuring the quality of your crops



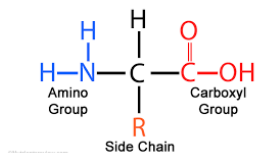
Bacteria and Molds

zNose® using its utilitarian features, quantitatively judge the quality of crops by identifying the growth of bacteria or mold in them. This electronic sniffer proficiently:

- Detects mold, bacteria or fungus growth
- Detects microbial volatile organic compounds
- Recognizes bacterial type using unique Vapor Print™ image
- Measures the presence of fungus or mold in crops

MEDICAL

Amino Acid Structure



Diagnostics

Using the science of gas chromatography, zNose® rapidly performs analytical measurements, cost-effectively on biological samples in real time. It helps in:

- Performing analytical measurements of blood, urine, stool, etc.
- Segregate and quantifies the organic chemistry of biological odors
- Classifies the amino acids by molecular weights
- Measures the levels of hemoglobin

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FOOD



Beverages

zNose® performs effective beverage quality control by quantifying the chemicals present in beverages accurately unlike the ambiguous human odor panel measurements. It helps us with the detection of:

- Undesirable materials that set back the flavor
- Toxin-producing bacteria
- Adulterant sugars
- Presence of harmful components



Food Aroma

zNose® using its advanced technology effectively scrutinizes food aroma and detects any kind of unwanted components that could set back flavor or be perilous to health. It also provides solutions to check:

- Packed food quality
- Fruit fleur essence
- Ripeness
- Quality of crops