# Installation:

The structures concerned are generally covered and ventilated, and operate in a slight vacuum in order to prevent the discharge of air to the exterior. The bad air is collected by an extraction system before being sent on to a special treatment unit. The deodorization itself takes place in this unit.

Depending on the characteristics of the site concerned (available space, concentration of pollutants, fluctuations in the air, etc.), the deodorization process will employ biological techniques (Alizair®) and/or physical-chemical techniques (Aquilair®).

In both cases, the installation will be dimensioned as a function of the air flow to be treated. In fact, both methods are known for their ability to cope with a very broad range of air flows.
They are therefore suitable for both small stations and large plants.

## AQUILAIR®

- **COMPACT**
  Of modular and vertical design, Aquilair® is easily incorporated into a compact assembly and can be easily adapted to increases in capacity.
- **FLEXIBLE**
  Regulation of the method by the Oxyreg® technique allows the acceptance of any variations in the concentration of the pollutants without affecting the quality of the discharged air. Aquilair® is thus able to cope quite reliably with extreme climatic events.
- **AUTOMATIC**
  The whole installation is automated and therefore requires no particular surveillance.

## ALIZAIR®

- **ECOLOGICAL**
  Based on a biological process, Alizair® is a "green" method that operates with no chemical product. The only products necessary are the nutritive ones required for the bioassimilation.
- **SIMPLE**
  Alizair® is also characterized by its simplicity. In fact, one single piece of equipment treats all odorous compounds, thus facilitating its installation and its operation.
- **ECONOMIC**
  Competitive in terms of installation cost, Alizair® is also energy saving.

**OXYREG®** is an original technique that allows instantaneous and precise adjustment of the concentration of chlorine injected into scrubbing towers. It is based upon an optical analysis system (patent of Veolia Water Solutions & Technologies and SECOMAM) that continuously controls the chlorine content of washing water.
The overall quantity of reagents used is reduced, and the purification output is increased.

Blois (France)
ALIZAIR® process

Your Contact

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# ODOR TREATMENT
## Sewage and Sludge

VEOLIA WATER
Solutions & Technologies

# Odor treatment

It is difficult to accept that pumping, water purification or sludge treatment stations, which help to protect the environment, can themselves be a source of pollution (visual, audible or olfactory); especially when they are located in towns, in residential areas or in tourist spots.

For many years, Veolia Water Solutions & Technologies has devoted itself to developing the concept of "zero nuisance" and is an expert in the creation of odor-free treatment plants that are acceptable to both those who work in them and those who live in their vicinity.

Many years of research on the measurement and control of gaseous pollutants has enabled Veolia Water Solutions & Technologies to develop highly efficient air-treatment methods that are perfectly suited to the odorous molecules produced by wastewater.

These methods are incorporated into new installations from the design stage, but may also be easily added to existing installations.

Zaragoza (Spain)
AQUILAIR® process

**Main sources of olfactory nuisance induced by wastewater or the sub-products of water purification (sludges, fats, etc.):**

- **sulfurous compounds**: hydrogen sulfide ($H_2S$), mercaptans, organic sulfurs, etc.
- **nitrogenous compounds**: ammoniac, amines, etc.
- **carbonyl compounds**: aldehydes, cetones, fatty acids, etc.

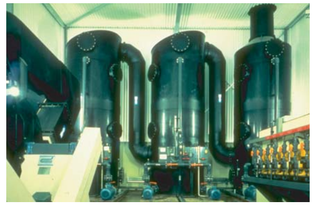
Antibes (France)
AQUILAIR® process

# AQUILAIR®

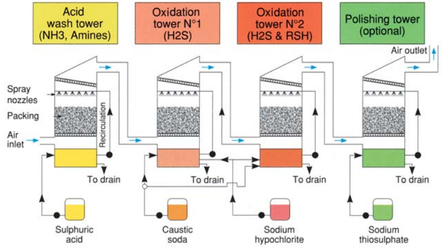
**AQUILAIR® is a chemical deodorization method that consists of transferring the odorizing gaseous molecules to a liquid phase.**

The polluted air is subjected to counter-current chemical washing, using aqueous solutions introduced into towers placed in series. These towers are lined with inert material that favors the gas-liquid contact.

Depending on the nature of the compound to be eliminated, a neutralizing agent (alkali or acid) is added to the washing water in order to accelerate the gas-liquid transfer and thus to increase the treatment's effectiveness. The addition of an oxidizing agent contributes to intensification of the transfer process and to regeneration of the washing water by modifying the absorbed molecules.



- The first tower is called the acid tower, in which a suitable pH is achieved by the addition of sulfuric acid. This column eliminates all the nitrogenous compounds.
- The second is an oxidizing tower, with the addition of bleach or of electrolytic chlorine, which it is made alkaline by the addition of soda. This stage is for elimination of the sulfurous compounds ($H_2S$, organic sulfurs).
- Depending on the circumstances, the use of a third tower that is strongly alkaline and oxidizing increases the effectiveness of the treatment on sulfurous compounds that are not very soluble, such as the mercaptans.
- In order to refine the treatment, a sodium bisulfite tower (a reducing agent) can be added. This fourth, finishing stage, at neutral pH, eliminates the aldehydes and cetones.




# Performance

**AQUILAIR®** is used to treat highly concentrated gaseous effluents that can go up to 100 mg/m3 of odorizing compounds.

This technique is very reliable, and reaches purification efficiencies of more than 99% guaranteeing the total absence of odor pollution.

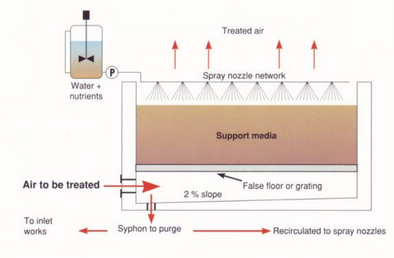
The characteristics of the inert lining material (nature, specific surface, volume, height, etc.) are calculated to optimize the gas-liquid contact time and transfer of the molecules.

# ALIZAIR®

**ALIZAIR® is a biological deodorizing system that employs the technique of biofiltration.**

It consists of a biological oxidation of the odorizing molecules in a liquid medium, inside a bioreactor that is lined with a solid material that fixes the purifying microorganisms.

The biodegradation process requires three conditions, namely the circulation of air inside the material, a constant humidity of the material, and the addition of nutritive elements (nitrogen, phosphorous, carbon, etc.).




- The support material that lines the Alizair® bioreactor is of the mineral (Biodagene®, maerl, etc.) or organic (peat, compost, etc.) type. It is supported on a perforated floor to allow air to circulate evenly within the structure. The air to be treated flows upwards.
- The malodorous molecules are biodegraded during the filtration process by special bacteria present in the support material. The composition of the air to be purified and the characteristics of the station determine the choice of the material to be installed and the nature of the nutrients to be added.
- Regular wetting of the surface of the filter allows a constant humidity to be maintained in the bed, the nutrients necessary for the bacterial activity to be introduced, and the products of the biological oxidation process (the sulfates in particular) to be removed.
- The sprinkler water recovered in the base of the reactor are recirculated or removed at the head of the station.

# Performance

**ALIZAIR®** is particularly well suited to treatment of the gaseous effluents generally encountered in water treatment and is able to cope with very large flows of air.

With its wide experience of deodorization on peat beds, Veolia Water Solutions & Technologies has developed the use of mineral materials that allows the method to be considerably improved.
The ALIZAIR® method can achieve very high filtration speeds (500 m/h) with purification charges that can exceed 50 g/h/m³ of material.