

Slovnaft Refinery

A Responsible Neighbour

Odour

The source of unpleasant odours may be caused by a number of different industries. The refining industry is no exception, where the primary source of smell is oil itself. Odours may therefore occur in almost any part of a refinery, not only during crude oil processing, but also flare burning, waste water treatment or product storage. The amount and type of odorous substances depend on the size of a refinery, the type of crude oil processed, processes used, measures to control air pollution and the standard of facility maintenance.

A key part of the petroleum refining process is the use of the best techniques and technologies available with the emphasis on air quality.

Sources of odorous substances relating to refinery processing technologies are:

- Initial processing of oil – fractional distillation
- Storage and processing of heavy distillation residues
- Storage of light hydrocarbons
- Processing of acidic waters – created by processes for removing hydrogen sulphide and ammonia
- Chemical sewage
- Wastewater treatment
- Combustion

The sources of odour may be divided into:

- Point sources – smokestacks, ventilation
- Diffuse sources – tanks for raw materials, semi-finished products and final products
- Fugitive emissions – pipe flanges, valves and equipment leaks

Odorous substances that can be smelled near refineries

Hydrogen sulphide - a colourless gas smelling like rotten eggs. The olfactory threshold susceptibility of hydrogen sulphide in humans is at 0.0007 to 0.014mg/m³ of air.

Sulphur-dioxide - a colourless gas smelling like struck matches. At high concentrations, it has a sharp pungent odour.

Ammonia - a characteristic pungent odour, the olfactory threshold being 26.6µg/m³.

Mercaptans - gaseous substances that smell like garlic or fermenting cabbage. Odourless natural gas is odorized using mercaptans as a warning signal due to their olfactory threshold of perceptibility at as low concentration as 0.04 mg/m³.

Asphalt - this smell is noticeable when asphalted roads.

The presence of these substances in the air is also detectable in very small concentrations but is not hazardous to health. The human body is able to tolerate these odorous substances at certain concentrations. Odour perception is highly subjective and depends on individual sensitivity. Often the odour itself is not hazardous to health, but it certainly reduces the quality of the environment in which people live. SLOVNAFT, a.s. therefore makes great efforts to remove the sources of odour.

Slovnaft has mapped odours and identified their source points. Results show that odorous substances do not have a negative impact on the health of the population. In rare cases, when concentrations of odorous substances in the air increase, i.e. during shutdowns and start-ups of production units, sensitive people perceive them as a nuisance.

Based on measurements taken when mapping odour sources, Slovnaft has introduced measures to reduce the release of odorous substances:

- Installation of low emission seals and gaskets on technological equipment
- Installation of hydrogen sulphide detectors in hazardous locations
- Regular maintenance and early detection of leaks in production facilities
- Introduction of the LDAR program (Leak Detection & Repair Program) as a tool to reduce the leakage of volatile organic substances and related odours
- Installation of flue gas desulfurization
- Vapour recovery during the storage and handling of materials such as oil and semi-finished products
- Continual reconstruction of chemical sewage into airtight sewage
- Roofing of waste water treatment plant and thermal destruction of captured vapours

Slovnaft reduces the impact of refinery production on its neighbours by introducing the best available techniques and technology. It creates high-quality products in an environmentally-friendly manner.

A key aim of the Slovnaft refinery is to minimise its impact on the life quality of the residents in its surroundings and to provide them with accurate information about its activities.

For any questions regarding air protection, please contact us by phone: **+421 (2) 4055 7800** or electronically at **info@slovnaft.sk**