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ODORLESS FLOUR

New technologies mitigate odors in fishmeal production.

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Covering our noses was almost a reflex action when visiting cities like San Antonio or Talcahuano and passing by a fishmeal plant. Not many years have passed since that unpleasant experience.

In the study "Background for the Regulation of Odors in Chile", prepared by Ecotec Engineering for the Undersecretariat of the Environment, it is revealed that fisheries and fishmeal factories have caused odor problems in the communities of Coronel, Talcahuano, Iquique, Arica, Caldera and San Antonio. "The greatest impact of odors occurred between 1980 and 2000 due to the freshness of the raw material from these industries. Due to technological changes within the processes and maintenance of fishing between capture and processing, odor events have been decreasing," states the document, whose final report dates back to August 2013.

Production Process

The same text indicates that although there are various production processes for seafood that can cause odor problems, the production of fishmeal is the one that is "leading the way" in this field.

Why? Macarena Cepeda, Environmental Engineer from the Association of Fishing Industries, Asipes, explains. "The origin of bad odors in the production of fishmeal is related to the quality of the raw material that enters the process. To the extent that the fish is fresh, the amine content of the gases drops considerably. However, unfortunately 78% of the raw material received by the plants comes from artisanal fishing, which does not have refrigeration systems in its boats. This is why, during the beginning of the fishing season, due to delays in landings, there is a deterioration of the raw material and an increase in bad odors."

The process of producing fishmeal begins with the reception of the raw material, which is stored in wells before going through cookers, presses and dryers, places where the fumes are mostly generated.

"Fishmeal is produced through a cooking and dehydration process during which the fish oil is separated and the water is removed from the product. It is a process that consumes high amounts of energy. The raw materials enter the production line through a feeding system. They are then subjected to cooking, at a temperature and for a duration that depends on the type of substrate used, but generally the materials are cooked for approximately 20



duration that depends on the type of autoclave used, but normally the materials are cooked for approximately 20 minutes at 90 °C," details the study.

The study adds that this activity generates considerable levels of odours. The cooked material is compressed in a screw press or centrifugal decanter, and the liquid from the press is diverted to a centrifugal collector where the fish oil is separated from the tail water. This latter flow is evaporated in a multi-phase evaporator and the remaining sludge is mixed with the press cake. These combined materials have a water content of less than 10%. After drying, the material is crushed to remove irregularities. The fishmeal is then sent to packaging or bagging and to intermediate storage. "Therefore, the unit operations likely to generate nuisance odour events are: cooking, pressing and drying, in addition to the liquid waste treatment plant," the study notes, which stresses that the most relevant factor influencing the generation of nuisance odours is the condition of arrival of the raw material, i.e. "freshness". That is why the fishing industry must properly preserve it in storage wells to prevent it from decomposing before processing and causing odor impact.

Read this full article in InduAmbiente 123, pages 22 to 24.



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