

 **Flooding of a petrol station**

ARIA 51506 – 05-01-2018 – 70 – CORBENAY

Naf 47.30: Retail sale of automotive fuel in specialised stores

Heavy rains flooded a petrol station, soaking the surrounding ground and ultimately seeping into the station's underground fuel storage tanks via their poorly sealed stilling wells. As a result, the fuel became unfit for sale. A specialist company transported 80,000 l of fuel to an oil terminal but left 40,000 l of watery fuel in the tanks. A second rainfall event occurred two weeks later, again filling the underground tanks with water. A second specialist company was called in to pump out the tanks. That very same day, the town's sewer system was found to be contaminated. Fuel had leaked into a several-kilometre stretch of the intermunicipal sewer system, affecting the operation of the wastewater treatment plant.

The water networks of the petrol station and its car wash as well as that of a nearby private home are upline of the first manhole affected by the pollution. The results of soil samples collected around the tanks showed that the tanks had not overflowed.

Flooding of an automotive equipment plant

ARIA 51009 – 22-01-2018 – 25 – MANDEURE

Naf 29.32: Manufacture of other parts and accessories for motor vehicles

A manufacturer of vehicle exhaust systems was flooded with between 20 and 40 cm of water when the River Doubs overflowed its banks during the night. The night-shift workers were evacuated and the company's entire staff were temporarily laid off. Production at one of its customers was also brought to a standstill due to a loss of power (ARIA 51017). Throughout the following night, firefighters pumped the flood water out of the company. Operations resumed two days later.

The operator plans to provide its employees with various equipment and gear so that they may respond quickly in case of another flood (extension leads, fans, boots, floor squeegees, generating sets, etc.). It has also directed that the following flood-response procedure be followed:

- the lowest shelves in storage areas are to be cleared;
- electrical components are to be placed in antistatic plastic bags;
- computer hardware in the offices must be placed high up.

Drills are regularly conducted to allow workers to know how to respond (protect machinery and offices, relations with firefighters, etc.). Cement was poured along the walls to delay water seepage. Gully and manhole covers will be weighted to prevent them from being raised too quickly. Battery-powered tools will have to be kept charged and ready for use at all times in case of a power outage. Electrical retrofits, particularly power outlets mounted on ceilings instead of walls, are also planned.

Flooding of an automotive equipment plant

 **ARIA 51017 – 22-01-2018 – 25 – MANDEURE**

Naf 29.32: Manufacture of other parts and accessories for motor vehicles

A manufacturer of vehicle steering columns was flooded when the River Doubs overflowed its banks during the night. Production was shut down in order to remove the flood water. Production at one of its customers was also brought to a standstill due to a loss of power (ARIA 51009). The operator monitored the water level each hour on the www.vigicrues.gouv.fr website. At the same time, it measured the water level in a surface water gully inside the building every two hours. It activated the site's flooding procedure when the level rose to 10 cm below the level in the facility. This monitoring enabled the operator to prepare and carry out the following safety actions:

- all electrical equipment was moved to at least 40 cm above floor level;
- all stored chemicals were checked during the flood period;
- most finished products were moved to a distribution centre;
- components used in manufacturing were moved to higher areas.

The flood forced the manufacturer to shut down operations for 29 hours, prevented access to the site for 24 hours, and cost an estimated €110k plus €75k in labour.

Since the flood, the operator plans to update its flooding procedure and calculate the cost of buying flood barriers for the openings of its buildings and the cost of getting a freephone number.

Flooding of a plastic packaging plant

ARIA 51525 – 22-01-2018 – 39 – ORGELET

Naf 22.22: Plastic packaging goods

The ramp of a loading bay at a plastic packaging plant was flooded during a period of heavy rainfall. Lorries were no longer able to access the building. The water was pumped out by firefighters and by the operator.

Flooding at a fish farm

ARIA 51650 – 22-01-2018 – 21 – AISEY-SUR-SEINE

Naf 03.22: Freshwater aquaculture

A fish farm was flooded for six days following a period of heavy rain. The farm was not in operation at the time of the flooding. A freezer and electrical equipment were rendered unusable by the water, two walkways were carried away by the current, a tree fell onto a wooden shed, and walls collapsed. The farm was up and running again in June 2018.

Flooding at a fish farm

ARIA 51658 – 22-01-2018 – 21 - VEUXHAULLES-SUR-AUBE

Naf 03.22: Freshwater aquaculture

A freshwater aquafarm was flooded by rising water. The operator tried to mitigate the consequences by opening the farm's sluice gates. Two ponds were heavily flooded, a levee was weakened, and much of the farm's population of salmonids and adult fish was lost. The farm was accessible a few days after the flood waters receded.

Flooding at an automotive equipment company

ARIA 51661 – 22-01-2018 – 25 – VALENTIGNEY

Naf 29.32: Manufacture of other parts and accessories for motor vehicles

An automotive equipment company was flooded by rising water. The water level, only a few centimetres high, naturally flowed out of the facility. The operator implemented security actions: equipment was shut down, access to the plant was prohibited, and the water level was monitored. The plant was shut down for two days. Parts that were to be delivered to a customer were taken by taxi.

The operator had not been issued with a flood alert by any outside sources. Instead, it saw the water level rise in real time.

Flooding at a quarry

ARIA 51907 – 22-01-2018 – 39 – CHAMPDIVERS

Naf 08.12: Operation of gravel and sand pits; mining of clays and kaolin

Swollen by heavy rain, the River Doubs overflowed its banks, flooding the front gate of a nearby sand and gravel mining company with 30 cm of water. The company's offices were not flooded. The mayor asked the operator to evacuate its employees.

In all, the various flood events of early 2018 halted the company's mining operations for 10 days and its offices and material processing operations for two days.

Flooding at an abattoir

ARIA 52188 – 22-01-2018 – 89 – MIGENNES

Naf 10.11: Processing and preserving of meat

An abattoir was flooded following a period of heavy rain. The water rose up through the surface water drainage system and flowed into the basement (abattoir and hide facilities) and the crawl space (new building). It did not flood the cutting and storage facilities, but it did reach the area in front of the unloading bays. The wastewater treatment plant was flooded as well, making any discharge impossible.

The basement and crawl space were pumped out. The ground leading to the bays was cleaned up. The resulting disruptions to the abattoir's operations were logistical in nature. Access to the abattoir by employees and hauliers was complicated by the closed approach roads (D43, D377, D177).

Flooding of a screw and bolts manufacturing plant

ARIA 52190 – 22-01-2018 – 25 – ORNANS

Naf 25.94: Manufacture of fasteners and screw machine products

At 8:00 am, the flooding procedure was implemented at a screw and bolt manufacturing plant following a sharp rise (1.77 m) in the water of the River Loue. Three facilities and the pit under the wire-drawing line were in danger of being flooded. At 1:00 pm, the Loue's level reached 2.21 m. The heat treatment facility was turned off. The production machinery in the three facilities was turned off and then taken away at 1:50 pm. In one of the facilities, water could be seen seeping from a wall along the Loue. At 3:20 pm, the plant's power supplies were shut off and the centre aisle's pump was turned on. At 3:40 pm, the Loue rose to 2.41 m, flooding the courtyard. At 5:00 pm, all three facilities as well as the offices, records rooms, changing rooms, and toilets were under 2 to 5 cm of water. Absorbent material was used to soak up any oil rising up from the gutters. The Loue peaked at 2.60 m at around 8:00 pm. The buildings were under 2 to 10 cm of water. At 9:00, firefighters installed a pump and the water level in the facilities and the centre aisle began dropping. At 6:30 am the following morning, the courtyard and centre aisle were clear of water. Only 2 cm of water remained in the facilities and changing rooms. The plant's employees began clean-up operations at 8:00 am and the plant resumed operations at noon.

Following this flood event, the operator raised the support rails of the barriers along the centre aisle, enlarged the manhole for the pump, marked the pumping point directly on the wall, and bought a pump to avoid having to rent one in case of another flood. The wall in the facility where water seeped through was sealed.

Flooding at a distillery

ARIA 52192 – 22-01-2018 – 70 – FOUGEROLLES

Naf 11.01: Distilling, rectifying and blending of spirits

A distillery was flooded by rising water. The alert was given by the distillery's caretaker. The water rose to 40 cm on the river side of the storage building. Although the storage building was not flooded, the approaches leading to it were, making access by forklift truck impossible. Access to the storage building was prohibited until the water level dropped. The distillery's operations were not affected by this rising water.

Production shutdowns at an automotive equipment company

ARIA 52192 – 22-01-2018 – 25 – AUDINCOURT

Naf 29.32: Manufacture of other parts and accessories for motor vehicles

Following heavy rainfall that had been forecast, an automotive equipment company began real-time monitoring of data recorded by the nearest water point and the low point of the river banks on its site. The operator implemented actions designed to:

- remove any outdoor storage areas;
- check that building doors are closed;
- keep managerial staff informed;
- ensure that strategic moulds are not stored at the lower end of the site;
- charge batteries in advance to ensure that logistics operations in the area continue uninterrupted;
- move materials-handling equipment and vehicles away from flood-prone areas.

Although the company's production facilities were not directly affected by this flood event, it was forced to stop production following shutdowns suffered by its main customer.

Flooding at a chemical plant

ARIA 51656 – 23-01-2018 – 71 – CHALON-SUR-SAONE

Naf 20.14: Manufacture of other organic basic chemicals

MINISTRY FOR AN ECOLOGICAL AND SOLIDARY TRANSITION/DIRECTORATE GENERAL FOR
THE PREVENTION OF RISKS / DEPARTMENT OF TECHNOLOGICAL RISKS/BARPI

A portion of the facilities at an upper-tier Seveso plant were flooded by the Saône River during a series of winter flood events. The water level inside the facilities reached the benchmark of 176 NGF.¹ The operator gradually shut down the facilities as the water level rose and as per the site's flooding procedure. The retention pits used to collect effluents and firewater, a recovery sump, the surface water and polluted water drainage systems, the retention pits under the production facilities, and the weighbridge were flooded. Production was halted for four days and supplies of raw materials were decreased. There were no impacts on people or the environment. The operator noted an increase in the site's internal workload.

Following this event, the operator updated the instructions to be followed in case of flood and added extra backup sump pumps.

¹ Note: "The General Levelling of France (nivellement général de la France or NGF) forms a network of benchmarks in mainland France and Corsica, now overseen by the Institut Géographique National. It is now the official levelling network in mainland France." (source: https://en.wikipedia.org/wiki/General_levelling_of_France)