

Case study 1

Extended periods of heat at the manufacturing site in Sweden

AstraZeneca's Södertälje site in Sweden is one of the largest production sites for medicines in the world (40% of sales values). Manufacturing here plays a significant role in the development, production, and delivery of new products for the global market. The site is responsible for the production, formulation, and packaging of final products for medicines delivered in liquid form, tablets, capsules, and respiratory devices.

In 2018, Sweden experienced an abnormally hot summer, one consistent with what we can expect to happen more frequently due to the impacts of climate change. The Södertälje site experienced temperatures over 25°C and 50% relative humidity for 17 days in a row, with 18 days >30°C.

The elevated temperature and humidity posed a challenge for maintaining environmental control; an essential requirement for Good Manufacturing Practice (GMP).

Short term consequences of exposure to elevated heat and humidity

The cooling demand during the extreme heat period exceeded the current cooling capacity of the site. This resulted in reduced production for two weeks and difficulties in maintaining temperature control for stored products. Whilst there was some impact on production, there was no interruption in the supply of medicines to patients as adequate stocks were maintained and mitigation measures were in place. Production returned to normal with additional cooling via rented cooling machines.

Between 2020-2021, investments were made in new cooling towers, process chillers and heat pumps to ensure that cooling capacity can mitigate future predicted temperature increases. This investment has improved the resilience of our site while supporting the delivery of our Ambition Zero Carbon goals, with the installed equipment using renewable energy.

The overall cost to mitigate production risks associated with exposure to increased ambient temperature was approximately \$4m between 2018-2021.

Mid- to long-term consequences (if no action is taken)

Without action to mitigate the rise in temperature, production could have been impacted due to an inability to maintain cooling capacity for GMP controlled areas during hot summer periods when the average temperature exceeded 25°C for several days in a row. This could have led to an interruption in manufacturing for approximately eight weeks.

AstraZeneca is unlikely to be exposed to a loss of revenue in the short-term due to climate-related events, as our business continuity planning builds in three months of resilience (levels of inventory held in downstream supply chain and dual sourcing strategy).

Plans to control future risks

Global Engineering are conducting studies to ensure sufficient cooling capacity is in place to maintain environmental control for GMP, to address the potential impact of predicted global temperature increases. Approximately 30 chillers will be changed. The new chillers will use refrigerants with a low Global Warming Potential (GWP) and will be more energy efficient, helping the site meet our science-based net zero target, while also helping to mitigate exposure to increasing energy costs.

Estimated cost: \$5m

Climate changes, RCP 8.5

	2030	2050
Day per year exceeding 35°C (days) ¹	+ 0.8	+ 0.9
Maximum Daily Mean Temperature in Summer (°C) ² Currently: 32.4°C	+ 1.5	+ 2.0

References

1 Representative Concentration Pathway (RCP) provided by ERM, based on Climate Model Intercomparison Project 5 (CMIP), used in the IPCC Assessment Report 5.

2 Representative Concentration Pathway (RCP) provided by SMHI, Sweden.



The Gärtuna manufacturing site in Södertälje, Sweden.