

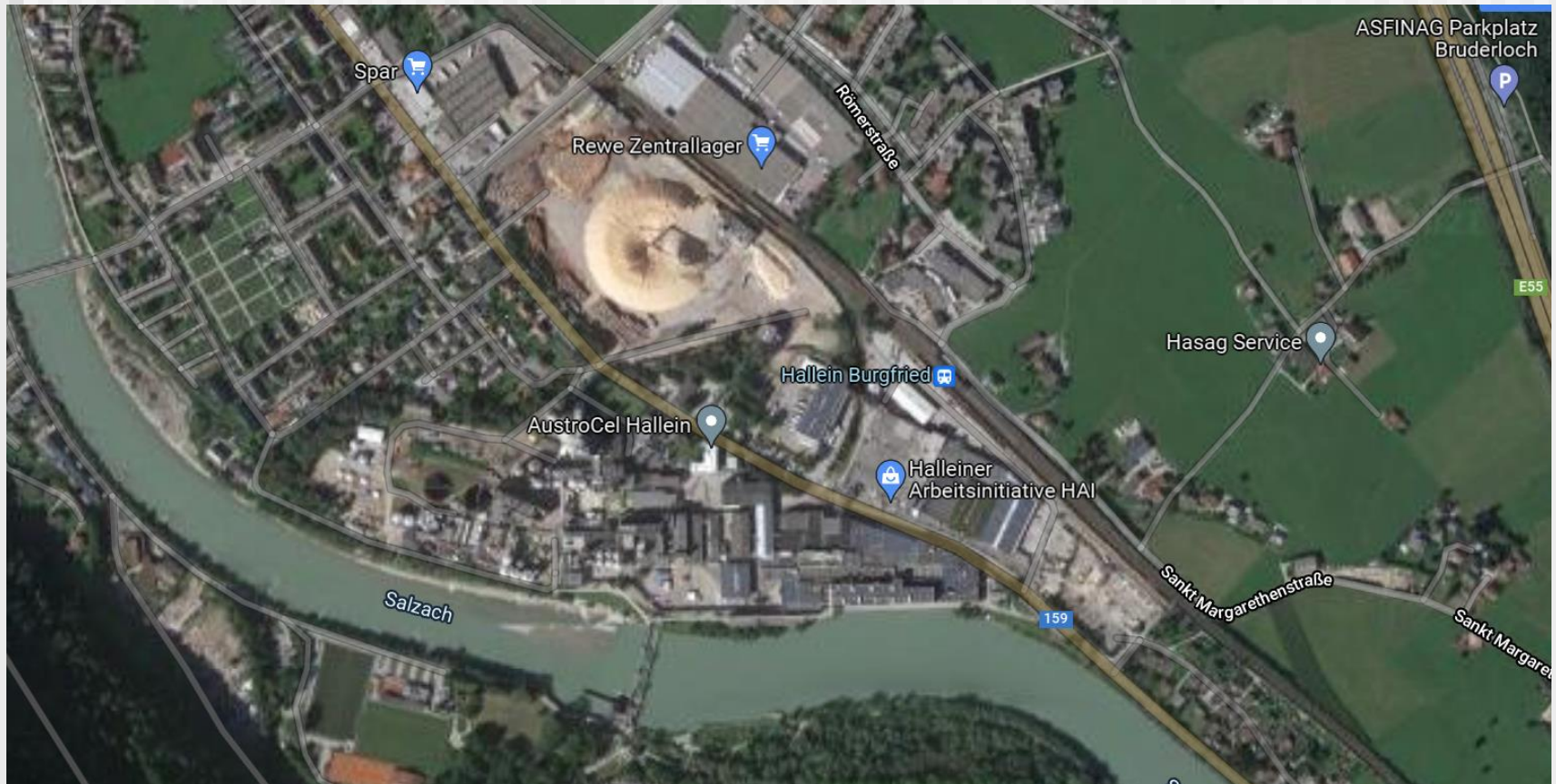
Accident Case Studies

Hallein, Austria

Annual Meeting TWG 2
Moss, September 2021

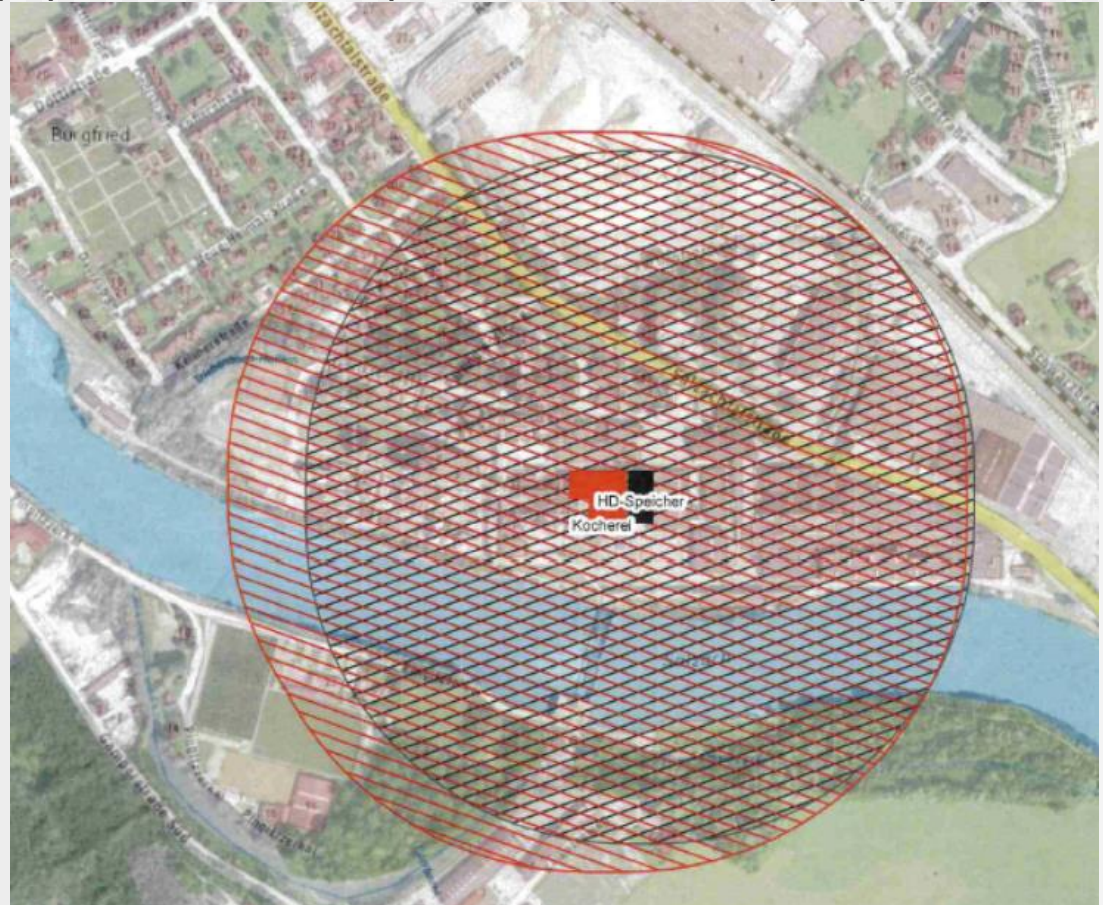
The Site of AustroCel

- Establishment for pulp production
- Located in Hallein, some 10 km south of Salzburg



Known Facts

- Accident happened 2nd June 2021 early in the morning
- Pipe in the area of the digester containing steam and sulphur dioxide (SO_2) first teared at a length of 4m and finally ruptured totally
- Working parameters of the pipe: DN200, 8 bar, $\sim 160^\circ\text{C}$
- Pipe was a pressure equipment under supervision of third party
- Appropriate distances:
 - Radius 330-350 m
 - Calculated by regional government



Actions Taken

- Waterspray („curtain”) to dilute the toxic cloud (internal fire brigade, later assistance from external firefighters)
- Measuring the concentration in lower places
- Warning the population by loudspeakers from cars driving through the residential area



Cause, Observations and Consequences

- Corroded weld seam was the cause for the rupture, but still under examination why this weld seam could corrode
- 1 fatality, no other casualties on-site
- No casualties off-site
- Concentration up to 12 ppm downwind in 1 km distance
- For comparison: AEGL2 0.75 ppm, AEGL3 30 ppm
- Noticeable in Salzburg (10 km)
- Loudspeakers with warning text (operated on-site) were functioning but not heard very well in the neighbourhood
- Information to the neighbours from public organisations were regarded as too late
- Many concerns and worries communicated to the authorities

Further Actions

- Establishment is lower tier, no safety report and no external emergency plan
- Now an actual emergency plan is “under construction”
- Pulp production was immediately closed, both by the operator and the authorities
- Pulp production still closed because the digester is not operable
- Operator undertakes massive investment (1.7 m€)
 - Check of the whole pressure equipment (tanks and pipes)
 - “Generous” replacement of parts of the installation
 - Upgrading of the digester vessel
 - Reconsidering of safety measures and procedures
 - New installation for gas and acid supply
- The case is still under examination of the state prosecutor
- Inquiry against persons unknown because of involuntary manslaughter

Lessons Learnt

- Information to the public, emergency planning esp. alarming chain and crisis management have to be improved
- Dispersion and consequences of the toxic cloud depend very much on the circumstances during the release and the settings of the scenario
- Additional technical and monitoring measures are necessary
- Coming up inspections with focus on ageing equipment and monitoring measures

Thank you!