

Carbon Dioxide Toxicity meeting, Monday 8 September 2025

The main aim of this meeting is to review and discuss the scientific evidence that underpins the acute toxicity thresholds for carbon dioxide that are used in regulatory safety assessments. In the morning, there will be four presentations on various aspects of CO₂ toxicity from HSE, DNV, RIVM and Shell. After lunch, there will be two more talks from DSB and an advisor to the Flemish regulator that focus on applications, looking at the impact of CO₂ toxic thresholds with some case studies for CO₂ storage facilities. The programme includes an hour-long session after the talks to discuss issues related to CO₂ toxicity. This may include, for example, discussion of alarm set-points and potential criteria for impairment. Involvement in the discussion session is encouraged and suggestions of discussion topics are welcome.

The meeting is being held simultaneously in two in-person venues:

- HSE, Merton Road, Bootle, L20 7HS, UK
- Shell, Carel van Bylandtlaan 16, 2596 HR, the Hague, Netherlands

and online on Microsoft Teams. Spaces for in-person participation are limited and they will be allocated on a first-come, first-served basis. The table below indicates the venue chosen by each of the speakers.

If you would like to attend this event, please register using the online form:

<https://forms.office.com/e/205JBwBaMf>, where you will be able to indicate your preferences for in-person (UK/NL) or online attendance.

Times (BST)	Name (Affiliation)	Description [Venue of speaker]
09:00 – 09:10	Simon Gant (Strategic Science Adviser for Net Zero, HSE)	Welcome and introduction [UK]
09:10 – 09:40	Ian Indans (Chemical Regulations Division, HSE)	Toxicology of carbon dioxide [UK]
09:40 – 10:10	Ann Halford (Risk Advisory, Energy Systems, DNV)	The effect of concentration fluctuations on the predicted toxic dose and the risk of fatality [UK]
10:10 – 10:30	BREAK	
10:30 – 11:00	Wouter ter Burg (National Institute for Public Health and the Environment, RIVM)	Deriving a probit function for carbon dioxide using the RIVM-methodology [Online]
11:00 – 11:30	Chantal Smulders (Global Head Product Safety Science and Regulatory Advocacy, Shell)	Analysis of recent human and animal CO ₂ exposure studies [NL]
11:30 – 12:10	LUNCH	
12:10 – 12:40	Bruno Reiniers (Dept. Environmental & Spatial Development, Flemish Government, Belgium)	Risk assessment for large-scale liquid CO ₂ storage at a port facility [NL]
12:40 – 13:00	Celin Russøy Tonheim (Norwegian Directorate for Civil Protection, DSB)	Risk exposure from CO ₂ facilities – Norwegian guidelines for calculation of risk contours and practical examples [Online]
13:00 – 14:00	DISCUSSION	Attendees are welcome to send suggestions of topics to discuss in advance to: simon.gant@hse.gov.uk