



Phosgene

Enhancing knowledge on effects and treatment

EPSC

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[covestro.com](https://www.covestro.com)

Phosgene is the basis for a growing number of sustainable products for health, well-being and lifestyle



Polyurethanes

Polycarbonates

Intermediates for Crop Protection Agents

Intermediates for Drug Agents

Coatings, Adhesives Sealants

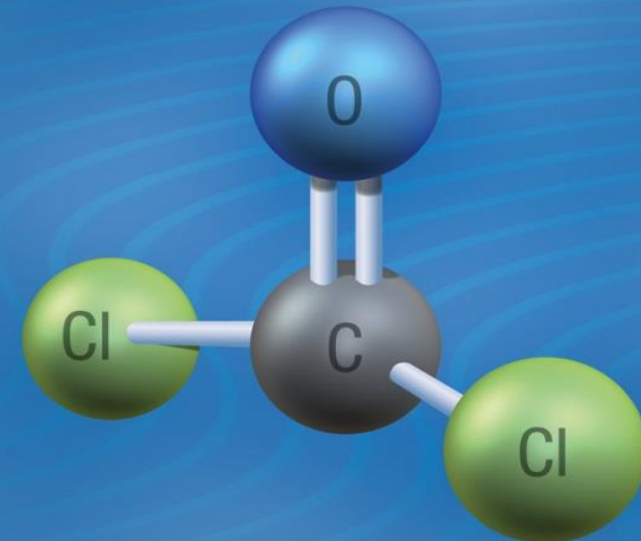
Lightweight, safe & clean, sustainable, protective, energy-saving materials, made with phosgene-based technology

What is Phosgene (a.k.a. Carbonyldichlorid) ?



Phosgene,

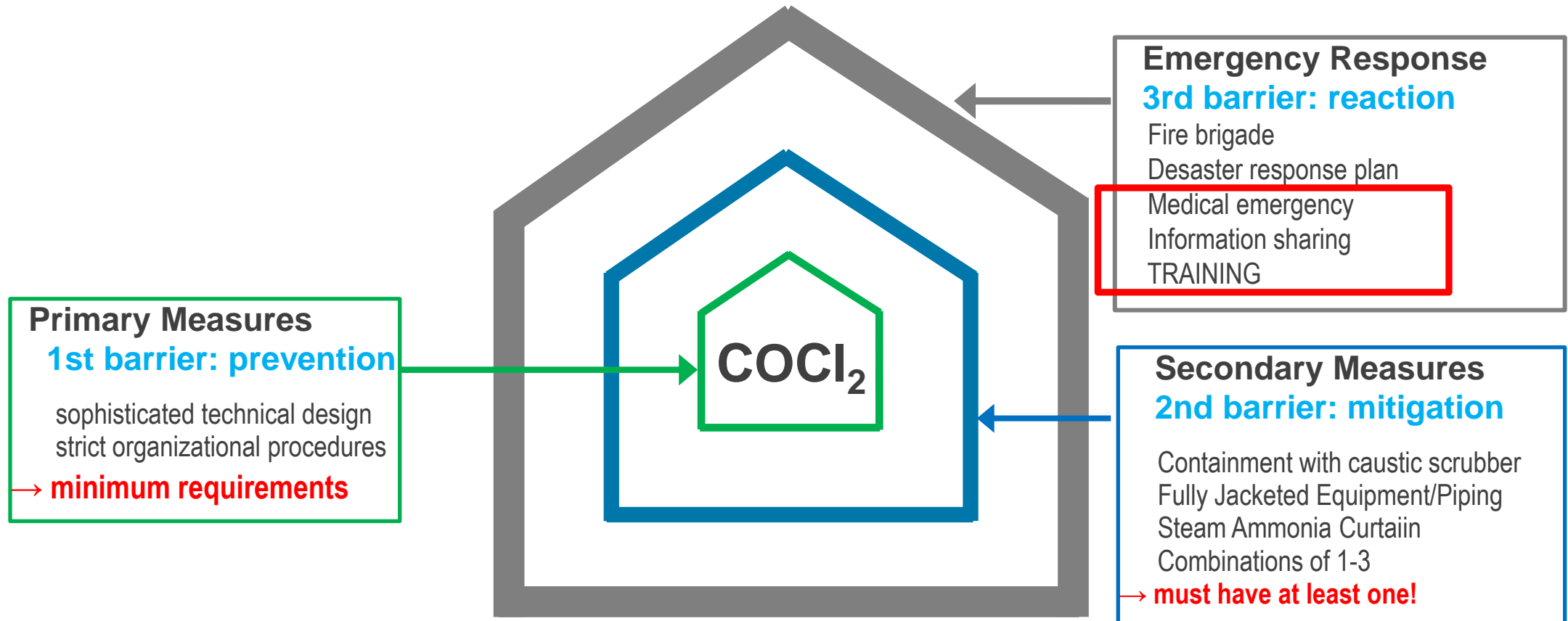
- was first synthesized 200 years ago
- Gaseous at room temperature, typical odor of fresh hay
- simple chemical structure – highly reactive
- Important intermediate in the chemical industry
- Highly Toxic with a delayed effect on the body



Phosgene Safety Concept – Several Layers of protection

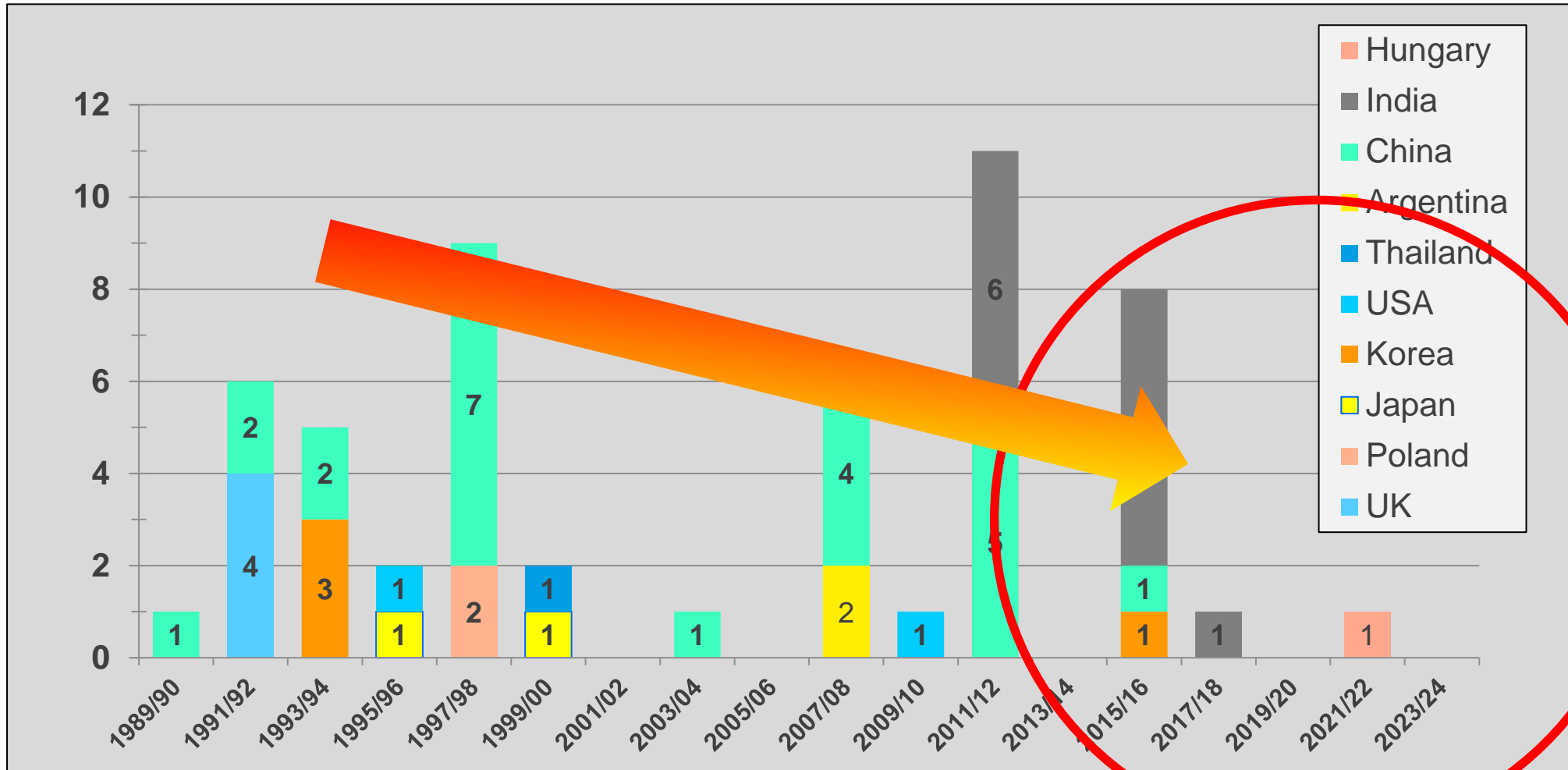


Generate → use immediately → minimize hold-up



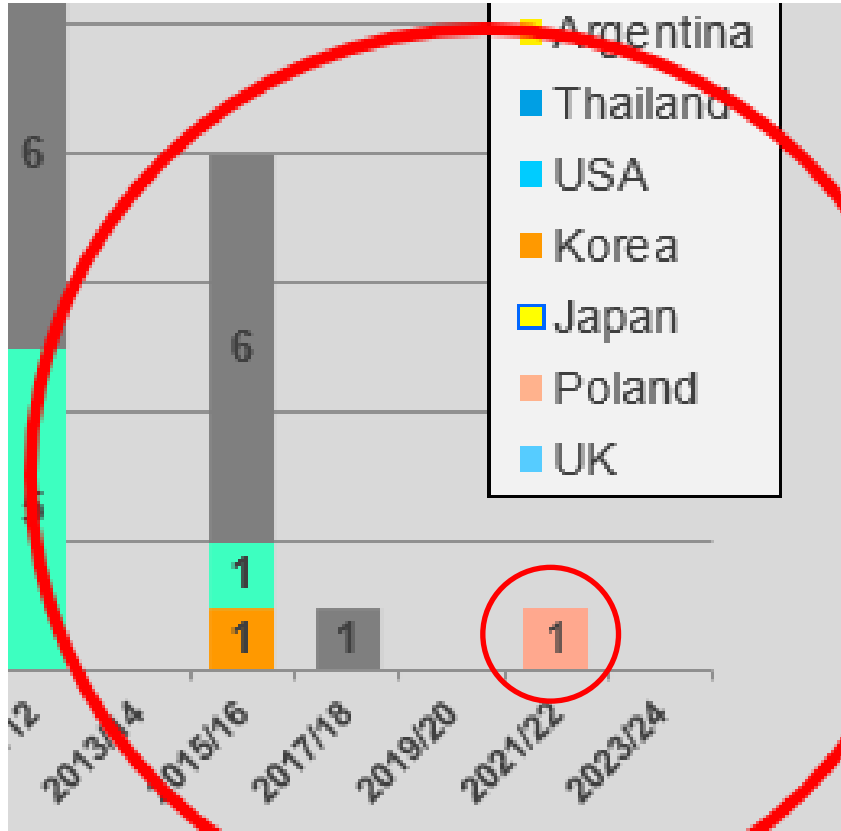
Fatal Incidents Globally are Decreasing

(based on the information available to us)



Last fatal phosgene incident (Hungary 2022)

(based on the information available to us)



The victim was exposed to liquid phosgene
He didn't wear sufficient protection
Since he felt good, no doctor was consulted
His supervisor sent him home
During the course of the night, he passed away

He died at the age of 23 years



Phosgene shows a delayed effect on the human body

Challenges



The Medical Movie



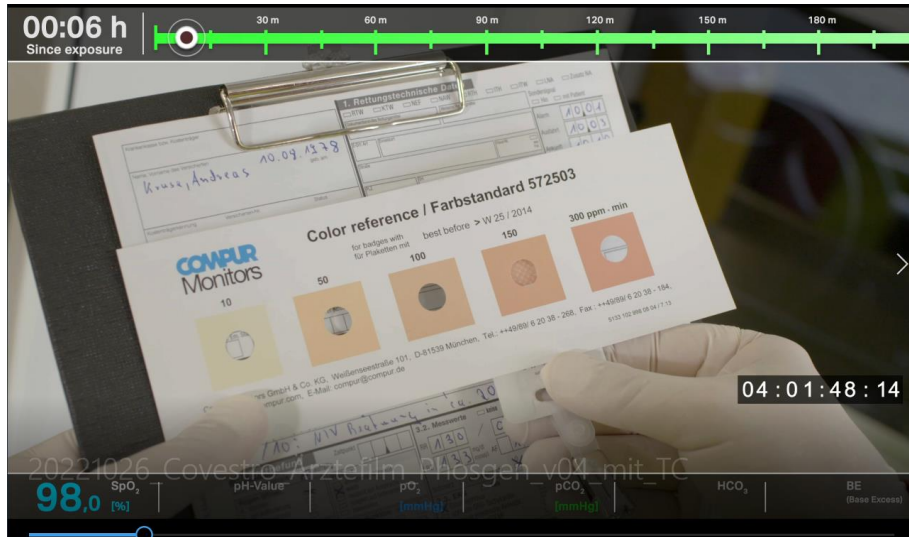
- Available in German
 - And with subtitles in English, Spanish, Gujarati, Chinese, Thai and Japanese
- Available internally and externally
- Targeted for medical experts ... but it vividly shows the lagging effect of exposure to phosgene



PEIC Concept

Phosgene Exposure Identification Card

Why the Phosgene Exposure Identification?



- Our internal rescue teams provide the first, immediate medical treatment
 - In severe cases, a person is sent to an offsite ICU
 - Though good contacts are established globally, the (external) medical experts might not be experienced in the effects of phosgene
 - The ‚well being‘ of a victim in the first hours after the incident could lead to a false sense of safety
- Medical experts ‚outside‘ need to get quick access to the crucial information

PEIC (Phosgene Exposure Identification Card)



- The PEIC contains the minimum set of information about a possible treatment
- Attached to the person sent offsite
- A QR code leads to a website providing further information
- Available in German, English, Spanish, Chinese and Dutch

Phosgene Exposure
Exposure 50-150 ppm*min

Usually a patient shows no symptoms (respiratory problems, cough irritations).

Suggested Approach

- **Calm down the patient**, maybe use of small doses of tranquilizers, bed rest
- **Monitoring:**
Pulse oximetry, vital signs, auscultation

Therapy depending on symptoms

- Oxygen only when dyspnoea or $SpO_2 < 92\%$
- Possibly Corticoid spray only with strong irritation of upper airways

Explanations

Exposition below 150 ppm*min:
Symptomatic therapy of respiratory irritations usually sufficient.
Development to a lung edema is highly unlikely.
Clinical monitoring for about 6 hours recommended.

Phosgene Exposure
Exposure 150-300 ppm*min

symptoms (respiratory problems, cough irritations), nevertheless development of lung edema up to 8 h.

Suggested approach

ent, maybe use of small doses of

etry, regular blood gas analyses (arterial), repeated vital signs and repeated X-ray of the lung)

Therapy depending on symptoms

y
ffs
g. 250-1000 mg SoluDecortin H i.v.
g. Furosemide 40 mg i.v.
pnoea or $SpO_2 < 92\%$

Explanations

r*min:
ve destabilization of O_2
ion of ARDS possible, even only

ge and a badge indicator >150 ppm
be avoided and corticosteroids and
I according to the clinic.

ould initially be non-invasive and
tion. Oxygen is **contraindicated**
ant anoxia is present.

Phosgene Exposure
Exposure above 300 ppm*min

Warning effects possible!

ning exposure dose patient may show no, or
ry problems, cough irritations). Nevertheless
ghly likely; latency period up to 8 hours.

Suggested approach

y arterial blood gas analyses
T-thorax in the course of developments if

Therapy depending on symptoms

-1000 mg SoluDecortin H i.v.)
eamid 40 mg i.v.)

→ if
• P/F Ratio <100 (at $FiO_2=1$), or
• $paO_2 < 60$ mm Hg

then
2. Evaluate ECMO-
indication

Explanations

ional oxygen-induced lung damage takes
ase in phosgene-induced lung damage.

oration, such as a rising haematocrit or a
ase in exhaled CO_2 , early intubation starting
gen supplementation up to 40% should be

r exposure it should be considered
pressure or additional use of ECMO may
oels.
an EVLWI (index of extravascular water
13-15 cmH₂O.

Phosgene Exposure Identification Card



What do WE do:

Card is provided by our medical team (first responders) to the external medical experts

OR (backup)

By the unit personnel (PEIC Cards are available in the unit)

Medical App/Website

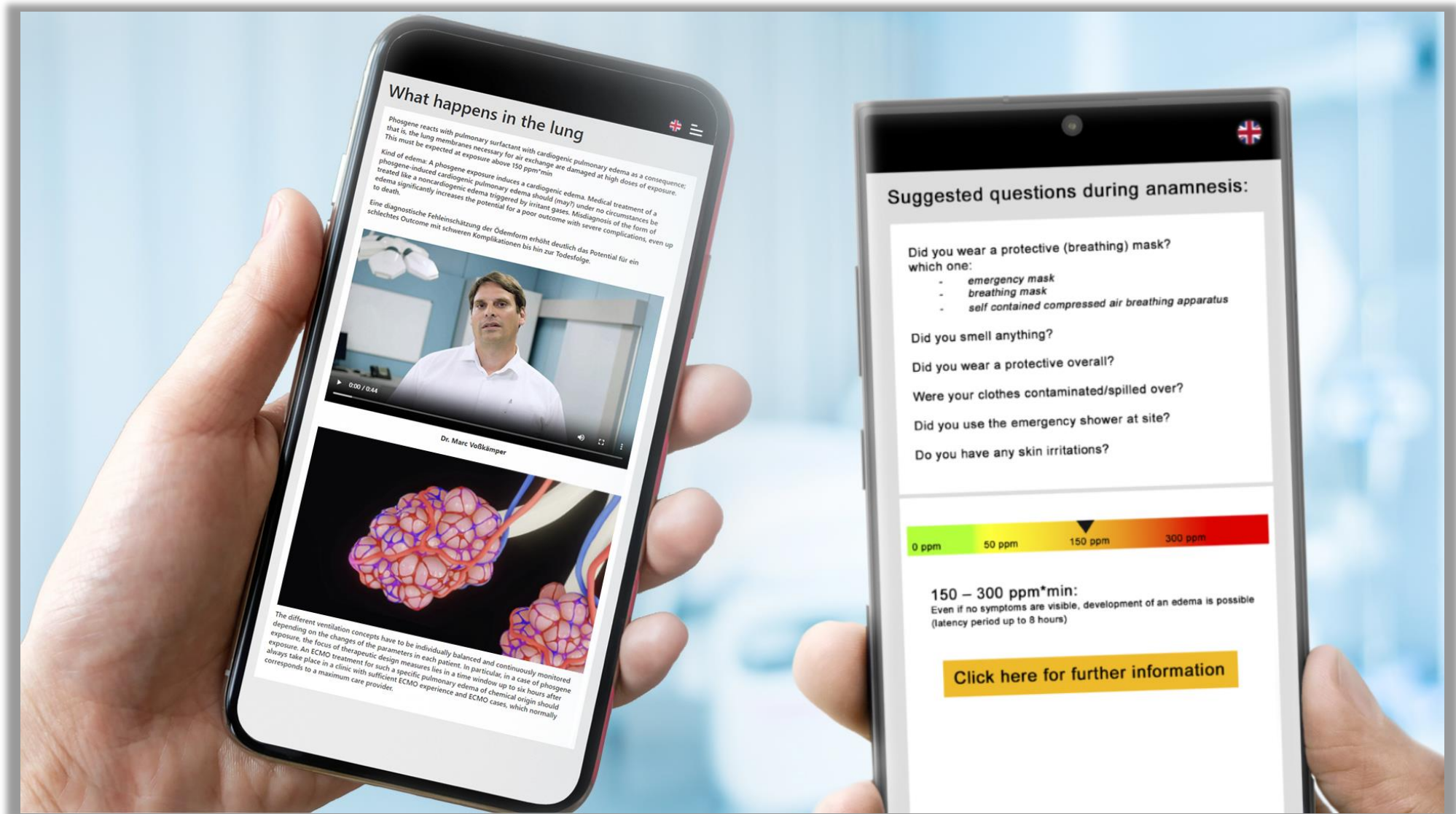


QR Code leads to a website, offering more details

- Sections of medical movie
- Detailed explanation
- Safety Data Sheets
- BASF Medical Guidance
- Research results



Medical App/Website



Behind each number stands an individual life



Behind each number stands an individual life





**Thank you for
your attention**

[covestro.com](https://www.covestro.com)