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DGUV Information 207-023

Check list for chlorination systems using chlorine gas and chlorine rooms in swimming pool facilities

February 2021

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Check list for chlorination systems using chlorine gas and chlorine rooms in swimming pool facilities

Note
If any of the items are checked “No”, immediate measures are to be taken.

The parenthetical information included in the check list in cursive refers to DGUV Regel 107-001 “Operation of swimming pools”.

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Check list

for chlorination systems using chlorine gas and chlorine rooms in swimming pool facilities

		Yes	No
1. Construction and equipment			
1.1	**Chlorine room**		
1.1.1	In the exit area, the floor of the chlorine room is not lower than the level of the adjacent premises and not above the level of a loading ramp *(Section 4.4.6.1)*.	☐	☐
1.1.2	The chlorine room does not contain any equipment other than that required to operate the chlorination system *(Section 4.4.6.1)*.	☐	☐
1.1.3	*The chlorine room is not accessible from any other room (Section 4.4.6.1)*.	☐	☐
1.1.4	The chlorine room is isolated from other rooms by fire-resistant and gas-impermeable materials *(Section 4.4.6.1)*.	☐	☐
1.1.5	The chlorine room does not have vents *(Section 4.4.6.1)*.	☐	☐
1.1.6	Measures have been taken to ensure that the temperature in the chlorine room cannot fall below 15° C *(Section 4.4.6.1)*.	☐	☐
1.1.7	Measures have been taken to ensure that the surface temperature of the chlorine gas cylinders does not exceed 50° C *(Section 4.4.6.1)*.	☐	☐
1.1.8	No lower lying rooms, pits, shafts or canals are located outside on the grounds in the safety zone around the door leading into the chlorine room *(Section 4.4.6.1)*. *Note: The safety zone should have a length of five meters. A distance of 3 meters is sufficient if the contents of only one 50-kg or 65-kg chlorine gas cylinder could leak at any given time.*	☐	☐

		Yes	No
1.1.9	Measures have been taken to prevent chlorine gas from entering fresh air inlets *(Section 4.4.6.1)*. *Note: This requires a larger safety zone; its size is to be determined based on the conditions at the site.*	☐	☐
1.1.10	The chlorine room has been designated in compliance with ASR A1.3 *(Health and safety labelling)* as specified in Annex 1 of DGUV Regel 107-001.	☐	☐
1.1.11	If the room is equipped with a chlorine gas disposal unit with a sprinkler system, electrical installations are protected against the splashing of water – IP rating x4 *(Section 4.4.6.1)*.	☐	☐
1.1.12	The chlorine room is equipped with a chlorine gas sensor *(Section 4.4.6.1)*.	☐	☐
1.2	**Exit**		
1.2.1	The chlorine room has one door leading directly to the outdoors *(Section 4.4.6.1)*.	☐	☐
1.2.2	The door of the chlorine room opens outwards *(Section 4.4.6.1)*.	☐	☐
1.2.3	Entry to the chlorine room is restricted to authorised persons, for example by means of a lock *(Section 4.4.1)*.	☐	☐
1.2.4	The door to the chlorine room can be opened from the inside at all times without a key *(Section 4.4.6.1)*.	☐	☐
1.2.5	The door to the chlorine room does not have vents *(Section 4.4.6.1)*.	☐	☐
1.2.6	The door to the chlorine room is not in the immediate vicinity of emergency and escape routes *(Section 4.4.6.1)*.	☐	☐

		Yes	No
1.3	**Chlorine gas disposal unit**		
1.3.1	The chlorine room is equipped with an effective chlorine gas disposal unit *(Section 4.4.6.1)*.	☐	☐
1.3.2	The chlorine gas disposal unit is automatically activated by a chlorine gas alarm system if a chlorine gas leak occurs *(Section 4.4.6.1)*.	☐	☐
1.3.3	In addition, the chlorine gas disposal unit can be activated manually from outside of the chlorine room *(Section 4.4.6.1)*.	☐	☐
1.3.4	If a sprinkler system is located inside the chlorine room, the room must be outfitted with adequate floor drainage including an odour trap *(Section 4.4.6.1)*.	☐	☐
1.3.5	The sprinkler system includes a sufficient number of spray nozzles in the ceiling and around the door. Note: A spray of water is produced by the spray nozzles at a spray angle of about 120° and with a mean drop size of less than 0.8 mm. In general, the sprinkler system should produce about 2 m^3 of water per hour and room. The amount of water produced must be at least double for systems with chlorine gas cylinders > 65 kg *(Section 4.4.6.1)*.	☐	☐
1.4	**Chlorine gas alarm system**		
1.4.1	The chlorine gas alarm system provides an audible signal to warn of a chlorine gas leak at 2.5 ppm at the latest *(Section 4.4.6.1)*.	☐	☐

		Yes	No
1.4.2	Chlorine gas leaks at concentrations of 5 ppm to maximally 20 ppm activate warning lights (outside of the chlorine room) and audible alarms *(Section 4.4.6.1)*. *Note: During operations, the alarm signals must be perceptible by a trained person at all times.*	☐	☐
1.4.3	If the contents of more than one gas cylinder could leak at any given time or the chlorine room is located in a structurally unfavourable location, the alarm signals are transmitted to a 24/7 response desk *(Section 4.4.6.1)*.	☐	☐
1.5	**Cylinders, lines and other equipment**		
1.5.1	Each chlorine gas cylinder is secured individually to prevent toppling *(Section 5.8)*.	☐	☐
1.5.2	Chlorine gas cylinders are labelled to indicate their content and filling level (“empty” or “full”) *(Section 5.8)*.	☐	☐
1.5.3	If not in use, the valves on the chlorine cylinders are closed with a lock nut and protective cap *(Section 5.8)*.	☐	☐
1.5.4	If the flow of water to be chlorinated is interrupted or shut down, the chlorine gas feed automatically shuts off *(Section 4.4.5)*. Note: A safety device such as a flow monitor has been installed in the pure water and sample water lines.	☐	☐
1.5.5	The discharge pipe of the pressure relief valve leads to an adsorption unit in the chlorine room. An additional vacuum safety valve has been installed in the vacuum pipe downstream of the pressure relief valve with the adsorption unit in the chlorine room (DIN 19606).	☐	☐
1.5.6	Suitable safety devices (emergency equipment) for sealing leaking valves are available *(Section 5.8)*.	☐	☐

		Yes	No
2. Operation			
2.1	**Trained staff and operating instructions**		
2.1.1	Only trained staff have access to the chlorine room and operate the chlorine gas system *(Section 5.2)*.	☐	☐
2.1.2	Operating instructions are available and posted in an accessible place *(Section 5.3)*.	☐	☐
2.1.3	New seals are installed when exchanging chlorine gas cylinders. The tightness of the seals is tested using a testing reagent (ammonium solution) *(Section 5.7)*.	☐	☐
2.1.4	An updated emergency response plan for chlorine gas is available *(Section 5.3)*.	☐	☐
2.1.5	Emergency drills are regularly carried out based on the emergency response plan *(Section 5.10)*.	☐	☐
2.2	**Personal protective equipment**		
2.2.1	Adequate breathing apparatuses (full-face masks with B2P2 combined filters or powered filtering devices) are worn when exchanging chlorine gas cylinders *(Section 5.14)*. *Note: Breathing apparatuses are to be inspected by qualified persons at regular intervals.*	☐	☐
2.2.2	A replacement filter is available for every breathing apparatus *(Section 5.14)*.	☐	☐
2.2.3	Filters are replaced before the end of the permissible storage period *(Section 5.14)*.	☐	☐
2.2.4	The date of opening is written on the filter. The filter is replaced 6 months after opening at the latest *(Section 5.14)*.	☐	☐

		Yes	No
2.2.5	Staff receive hands-on safety training in the use of breathing apparatuses each year *(Section 5.14)*.	☐	☐
2.2.6	Breathing apparatuses are easily accessible outside of the chlorine room and stored in a dust and moisture-free environment *(Section 5.14)*.	☐	☐
3. Inspection			
3.1	The chlorine gas system was inspected by a qualified person prior to first use (Section 14, Operational Safety Ordinance (BetrSichV)).	☐	☐
3.2	The chlorine gas system and the chlorine gas alarm system are regularly inspected by a qualified person and prior to each restarting *(Section 7)*. *Note: An inspection interval of 12 months has proven to be effective.*	☐	☐
3.3	The chlorine gas disposal unit with the sprinkler system is regularly inspected to ensure it is in working order *(Section 7)*. *Note: An inspection interval of 6 months has proven to be effective.*	☐	☐
3.4	The water trap in the floor drain is inspected weekly *(Section 7.1)*.	☐	☐

Date

Signature

Sources

- Betriebssicherheitsverordnung, BetrSichV (Operational Safety Ordinance)
- Arbeitsstättenverordnung, ArbStättV (Workplaces Ordinance)
- Gefahrstoffverordnung, GefStoffV (Hazardous Substances Ordinance)
- Technische Regel für Arbeitsstätten, ASR. A1.3 “Sicherheits- und Gesundheitsschutzkennzeichnung” (Technical Rules for Workplaces ASR A1.3 “Safety and health protection labels”)
- DGUV Regel 107-001 “Betrieb von Bädern” (Operation of swimming pools)
- DGUV Information 213-040 “Gefahrstoffe bei der Aufbereitung von Schwimm- und Badebeckenwasser” (Hazardous substances in the preparation of water for swimming pools and pools for bathing)
- DIN 19606:2020-01-00 “Chlorgasdosieranlagen zur Wasseraufbereitung – Technische Anforderungen an den Anlagenaufbau und Betrieb” (Chlorinators for water treatment – Equipment, installation and operation)

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