



// **EMERGENCY CHLORINATION
FOR WATER SUPPLIERS**

// **LEGIONELLA PROBLEMS IN
DRINKING WATER INSTALLATIONS**

// **TOPAX DE PRESENTS ITS
NEW DESIGN**

UNINTERRUPTED DRINKING WATER SUPPLY

EMERGENCY CHLORINATION FOR WATER SUPPLIERS

For water utilities companies, the uninterrupted supply of clean drinking water that corresponds with the requirements of the German Drinking Water Ordinance is of the utmost importance. In order to ensure this, the Water Safety Plan concept (WSP) has been established as a part of risk management procedures for

water suppliers. Technical risk management and technical security management is required. Relevant notes regarding this are provided in DVGW working paper W 1001 'Drinking Water Supply Security – risk management in normal operations' (2008-08), including W 1001 'supplement 1: implementation in water distri-

bution systems' (2011-11).

In case of emergency chlorination, all ordinances involving health and occupational protection and generally acknowledged regulations for the technologies must be maintained. Additional criteria include speedy availability and the cost, of course.

An emergency chlorination for 100% of the supply capacity and for all supply sections is not feasible due to the costs involved. Nevertheless, there are legal regulations for securing basic water supply and sewer services within the context of an ecologically sustainable water management policy and human rights to clean drinking water.

For water supply utilities, the following dilemma results: on the one hand, they are responsible for ensuring that the population is supplied with drinking water according to the German Water Provision Act, and on the other hand, water suppliers are criticised by the German Antitrust Agency for maintaining redundant systems and components, since these influence operating costs and water prices.

Water suppliers are being demanded to minimise costs in general. Since not all components are able to be maintained redundantly due to the costs involved, water suppliers are being requested to create risk analyses that indicate especially sensitive systems, components, and processes. In order to avoid contamination of raw water due to technical accidents or in case of a catastrophe, emergency chlorination systems are prescribed within the context of technical risk management. The mobile emergency chlorination system from Lutz-Jesco is able to be used especially for sensitive

systems, processes, and supply sections that are subject to a high risk of failure.

RECOMMENDATION FOR AN APPROACH IN CASE OF EMERGENCY CHLORINATION

Possible locations for emergency chlorination:

- + Wells (microbiology only as required)
- + Pump houses (e.g. suction vessels)
- + Network and close to pump houses
- + Median network and the distribution pipes
- + Elevated tanks

Minimum concentration of free, effective chlorine:

- + 0.1 mg/l as transport chlorination after 30 minutes reaction time,
- + 0.1 mg/l at the distribution pipe across min. 24 hours
- + 0.2 – 0.3 mg/l during active chlorination with stable adjustment
- + prior to delivery: 0.5 mg/l in case of standing water after min. 1 hour reaction time for virus neutralisation

Inspection frequency:

- + daily microbiological examinations
- + hourly chlorine concentration inspections prior to stable adjustment
- + daily chlorine concentration inspections following stable adjustment
- + daily microbiological inspections for as long as chlorine is detected

Duration:

- + until reliable cleansing of the cause of the contamination along with simultaneous inconspicuous microbiological findings depending on water pumping and local conditions of the indi-



Mobile emergency chlorination system for chlorine bleaching containers (up to 60 l)

vidual case

- + Delivery of water to the consumer or cessation of emergency chlorination activities in case of inconspicuous findings
- + microbiological follow-up examination: after 1 week, after 2 weeks, after 1 month including corresponding network samples in the representative network area
- + subject to testing of individual case

Documentation:

- + Entry of all measurement results for free chlorine into the operations diary
- + Entry of microbiological findings after receipt into the operations diary
- + daily notification to the local health authority //

LEGIONELLA PROBLEMS AND REMOVAL IN DRINKING WATER INSTALLATIONS

WHAT DO OPERATORS OF SPORTS FIELDS AND SPORTS ARENAS NEED TO CONSIDER?

After the new drinking water ordinance became effective in December 2012, many operators of drinking water installations are now subject to much stricter requirements. According to the drinking ordinance, operator obligations result when drinking water 'is delivered to the public or a large-scale system (>400 litres) for heating drinking water is present or at least one outlet pipeline of the water heater up to the removal point possesses a volume greater than 3 litres.

Since drinking water is delivered to the 'public' at sports grounds and sports arenas without dispute, a variety of operator obligations

and requirements results from the drinking water act:

- + The drinking water must be provided so that its consumption or use is not suspected of damage to human health, especially due to the presence of germs (section 4).
- + The threshold values specified for microbiological parameters (section 5) and for chemical parameters (section 6) may not be exceeded.
- + The requirements and thresholds for indicator parameters must be maintained (section 7) at every drinking water outlet and every outlet fixture (section 8).

Concentrations of microorganisms or chemical materials that could contaminate the drinking water or negatively impair its delivery should be kept so low as possible according to the generally acknowledged regulations of the technology with representative costs and according to individual cases.

The implementation of these requirements is ensured by the following procedures:

- + The drinking water system must be reported to the responsible local health office.
- + Sampling fixtures for examination for legionella must be installed by a specialist:
 - at drinking water heaters in the heated water flow [heated water outlet],
 - at drinking water heaters in the circulation backflow [heated water input],
 - at the end of representative ascending pipes (ascending pipes that are furthest away or most unfavourable hydraulically, however at least those with showers).
- + Once annually, an accredited laboratory must be commissioned to take water samples in the technical in-house water heating and distribution system and to test these samples for legionella. This testing obligation applies especially to systems that possess showers or other installations (fountains, lawn sprinklers, etc.) and cause the drinking water to be sprinkled.
- + Once annually, the operator must inform consumers regarding the quality of the drinking water (examination results) and regarding materials that have been used in the drinking water installation to prepare and distribute the water.
- + Following three sequential examinations that are free of complaints, this interval may be extended to 3 years.

TECHNICAL PROCEDURES FOR SUCCESSFUL CORRECTION IN CASE OF CONTAMINATION

In case the technical intervention value for legionella (>100KBE/100ml) or a requirement/threshold value according to section 5, 6, or 7 of the drinking water act is exceeded, the following procedures must be considered:

- + ensure correct operation of the drinking water installation (immediately).
- + hydraulic calibration of the complete drinking water installation, especially in the heated drinking water (immediately).
- + cleaning and flushing of the complete drinking water installation including storage containers by specialist (immediately).
- + exchange pressure compensation vessels without flow fixtures with units featuring flow fixtures (immediately).

- + 'water must flow' (short-term): are all existing showers being used regularly?
- + localisation and correction of technical defects in the drinking water installation (short to mid-term):
 - de-installation (removal) of 'dead' lines,
 - de-installation (removal) of unused extraction points,
 - damping of the complete drinking water installation (cold and hot water),
 - retro-fitting and uninterrupted service of heated drinking water circulation,
 - change filters according to standard specifications,
 - separate connections from non-drinking water lines,
 - carry out maintenance and upkeep regularly.
- + de-installation of oversized storage containers and pipelines (mid-term)

ORGANISATIONAL ACTIVITIES RECOMMENDED IN CASE LEGIONELLA FINDINGS ARE CONFIRMED

1. information from the responsible local health office (within 14 days).
2. Collect information (as-completed drawing, operation, inspections, maintenance, upkeep of the drinking water installation [alterations], water temperature measurement values, hydraulic calibration, additional findings, water analyses, etc.).
3. Form a competence team: operator, planner, plumber, local health office, specialist as required.
4. Procedures for testing the technical hygienic quality of the drinking water installation in the context of a risk analysis in cooperation with the responsible local health office.
5. Identification of hygienic problem areas on-location at the drinking water installation.
6. Interpretation of findings based on knowledge of the affected drinking water installation and in consideration of all existing findings (consider trends, no procedures based on individual findings).
7. As required, installation and commissioning of a system for disinfecting the drinking water according to the drinking water act section 11 (e.g. chlorine dioxide) in coordination with the responsible local health office (information).
8. Information for consumers regarding the affected drinking water installation and the type and concentration of the disinfectant used in the drinking water (e.g. public display at the building).
9. Completion of microbiological inspection in cooperation with the local health office (on-site inspection).
10. Decision regarding continuation of drinking water disinfection measures in cooperation with the responsible local health office (e.g. 6 months), followed by a new inspection examination and decision.
11. Ensure future operation of the complete drinking water installation according to the general acknowledged regulations for the technology including regular maintenance and upkeep. //

TOPAX DE PRESENTS ITS NEW DESIGN

TWO-CHANNEL CONTROLLER FOR MEASURING AND REGULATING IMPORTANT PARAMETERS INVOLVED WITH WATER TREATMENT

As a two-channel controller, TOPAX DE monitors water values present in water treatment and sewage treatment and controls up to two dosing systems connected for water treatment in real time. In this way, it ensures constant water values in the most varied of applications while taking into account current standards and guidelines, and it may also be used universally.

COMPACT SOLUTION IN MULTIPLE VARIATIONS



TOPAX DE two-channel controller

TOPAX DE has been developed further, which is based on the proven, modern technology of our TOPAX DX multi-channel controller, is available in a number of variations. The modular design makes TOPAX DE an adaptable and highly compatible partner for measuring and control technology. The ability to connect TOPAX DE directly to a variety of sensors for measuring water parameters makes every variation capable of meeting requirements of optimal water preparation.

The large colour display, which presents all information in plain text and the concise, multilingual menu guidance make TOPAX DE easy to understand and simple for anyone to use. The integrated online help enhances its user friendliness.

The access options for viewing current measuring and control values are extensive: all current measurement data and control

values are indicated in the main display. This may also be displayed via the screen writer for 24 hours at various zoom levels. The data logger and the logbook use the memory card to archive the values. The PC is able to export, display, and archive the memory card (Software TopReader) of the TOPAX DE. The two-channel controller may also optionally be fitted with an RS 485 serial interface. This provides the option of transferring the data directly to a PC and displaying it with the TopView visualisation software. Communication with an SPS controls via RS 485 is also possible; the Modbus data communication protocol is installed.

Maintenance and upkeep of the measuring unit including sensors and regulator has been made significantly easier via menu-guided calibration and subsequent validity check of the calibration results. Faulty sensors or errors in the calibration process are automatically detected and displayed by the TOPAX DE.

The TOPAX DE possesses a number of digital and analogue measurement value inputs. 0/4 ... 20 mA analogue outputs are provided to transfer measurement values or for use as controller outputs. Potential-free electronic switch outputs or relay outputs may also be configured as impulse frequency, impulse length, or as 3-point step output as controller outputs.

Lutz-Jesco sensors and dosing pumps are connected very simply via terminal blocks to the modules in the TOPAX DE. Activation is supported by the pre-selection of actuators able to be triggered displayed in plain text, which may be assigned and freely configured in a variety of outlet signals. The complete wiring diagram is then displayed following configuration. //

CONVENTION AND EXHIBITION DATES

+ Wasser Berlin, 23.04. – 26.04.13, Berlin

+ REITZE TEC, 15.05. – 16.05.13, Bremen

+ Aquanale, 22.10. – 25.10.13, Cologne

+ DVGW Meistererfahrungsaustausch, 03.12. – 04.12.13, Lübeck



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