



DECONTAMINATION SOLUTIONS

Better understand to better choose



What is decontamination used for?

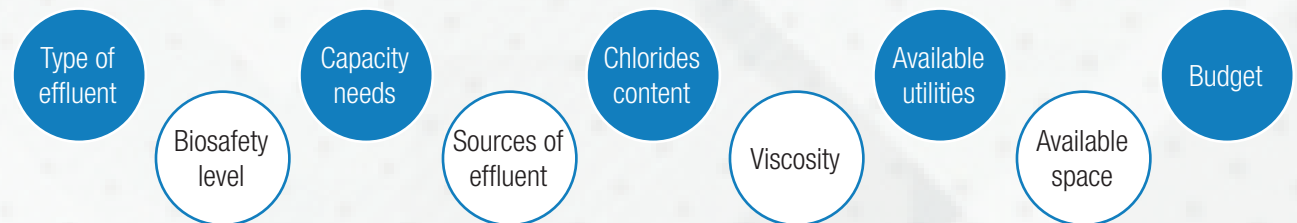
The WHO categorizes microorganisms based on dangerousness for personnel and the environment, vectors and use. Depending on the level of containment of your installation (**Biosafety Level i.e. BSL**), the decontamination of biological waste may be required or even mandatory prior to discharge. It is therefore important to know the classification of your germs: BSL 1, 2, 3 or 4. The decontamination system must guarantee decontamination of biologically contaminated liquid effluent and the process must be validated in accordance with specified testing protocols.

CRITICALITY	BSL	AGENTS	DECONTAMINATION
Low risk	1	Not known to consistently cause disease in healthy adults	NOT COMPULSORY (required for GMOs)
↓	2	Curable diseases for which there are available vaccines or treatments <i>Examples: Flu, Typhus fever, vibrio Cholerae</i>	COMPULSORY
	3	Deadly diseases for which there are available vaccines or treatments <i>Examples: Avian Flu, Yellow fever virus, Nipah Virus, Prions, Covid-19</i>	COMPULSORY
	High risk	4	Fatal diseases for which there are no available vaccines or treatments <i>Examples: Smallpox (variola), Viral hemorrhagic fevers (Ebola, Marburg...)</i>



What should I know before choosing a decontamination solution?

Selecting the most suitable decontamination solution is not that easy since it implies taking into account several criteria.



That is why it is highly recommended to let your experienced decontamination system supplier bring you support by understanding your needs in a customer-oriented way and translating them into appropriate technical and financial proposals.



Chemical or heat decontamination?

There are two ways to decontaminate: either chemically or thermally.

TREATMENT	CHEMICAL TREATMENT	HEAT TREATMENT
PRINCIPLE	Chemicals are usually mixed at a specific concentration directly with the effluent for a specific time (and a specific temperature if required).	The thermal decontamination consists in heating the liquid effluent for a specific time at a specific temperature since nothing can withstand heat.
DRAWBACKS	It may seem simple, but such treatment has drawbacks such as corrosion of the installation, clogging, product neutralization before draining and dangerous vapors or chemicals release. In addition, it is also a problem to treat large volumes and to obtain treatment validation.	The main drawbacks of this solution are energy consumption and utilities availability, but these systems can be equipped with energy recovery section and can be steam or electricity-operated, depending on the Customer's possibilities.

ABC Actini is an expert in heat decontamination systems.



Sterilizing value principle

To understand thermal decontamination, you need to understand the sterilizing value principle, referred as F0. For the destruction of the germs, we calculate the F0 value which is an equivalence in terms of exposure time to reach the same lethality effect as a treatment at 250°F (121.1°C) for a higher treatment temperature. For example: 275°F (135°C) for 2 minutes gives a F0 of 50 like 50 minutes at 250°F (121.1°C).



Batch or Continuous Flow decontamination?

There are two types of design: batch and continuous flow decontamination solutions.

TREATMENT	BATCH TREATMENT	CONTINUOUS FLOW TREATMENT
PRINCIPLE	The Batch treatment consists in trapping the biowaste effluent in a killing tank / coil and heating it at a specific temperature for a specific time with control of the temperature for a core treatment.	The Continuous flow treatment consists of continuously circulating the biowaste effluent in electricity or steam-heated tubes at a specific temperature for a specific time. These tubes offer a compact and restricted area allowing uniform heat distribution.
BENEFITS	This solution is particularly effective for the decontamination of solids and high viscosity products.	This solution is, among other advantages, ideal to treat large volumes of effluent.

ABC Actini offers both solutions because together they meet all Customer needs and all URS.