

**Risk Classification of Organisms:
Overview of apathogenic organismen other than viruses,
bacteria, fungi or parasites, classified by COGEM
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COGEM advice CGM/211228-02

The Netherlands Commission on Genetic Modification (COGEM) advises the Dutch government (amongst others) on the classification in risk groups (classes) of organisms according to the risk they pose to human health and the environment. These classifications are written in Dutch and are therefore only published on the Dutch part of the COGEM website.

COGEM has published a new overview of apathogenic organisms which do not fall under the current categories of bacteria, viruses, fungi and parasites. In order to inform international organisations about the classification of these organisms by COGEM, this overview been translated. This overview concerns species that have been advised on since 2000. The organisms are categorized by micro-algae, other single-celled organisms, and multicellular organisms.

Table 1. Overview of classified apathogenic or non-parasitic single celled of multicellular organisms.

Species	Family	Phylum	PG class	Comments
Mico-algae				
<i>Aurantiochytrium limacinum</i>	<i>Thraustochytriaceae</i>	Bigyra	1	There are different views on whether thraustochytrids should be considered microalgae. ¹
<i>Chloroidium ellipsoideum</i> (previously known as <i>Chlorella ellipsoidea</i>)	<i>Watanabeaceae</i>	<i>Chlorophyta</i>	1	
<i>Chloroidium saccharophilum</i> (previously known as <i>Chlorella saccharophila</i>)	<i>Watanabeaceae</i>	<i>Chlorophyta</i>	1	
<i>Chromochloris zofingiensis</i> (previously known as <i>Chlorella zofingiensis</i>)	<i>Chromochloridaceae</i>	<i>Chlorophyta</i>	1	
<i>Dunaliella tertiolecta</i>	<i>Dunaliellaceae</i>	<i>Chlorophyta</i>	1	
<i>Ettlia oleoabundans</i> (syn. <i>Neochloris oleoabundans</i>)	<i>Chlamydomonadales incertae sedis</i>	<i>Chlorophyta</i>	1	
<i>Isochrysis galbana</i>	<i>Isochrysidaceae</i>	<i>Haptophyta</i>	1	
<i>Lobosphaera incisa</i> (syn. <i>Parietochloris incisa</i>)	<i>Trebouxiaceae</i>	<i>Chlorophyta</i>	1	
<i>Nannochloropsis gaditana</i>	<i>Monodopsidaceae</i>	<i>Ochrophyta</i>	1	
<i>Nannochloropsis oceanica</i>	<i>Monodopsidaceae</i>	<i>Ochrophyta</i>	1	
<i>Nannochloris</i> sp. Utex 1999	<i>Chlorellaceae</i>	<i>Chlorophyta</i>	1	

1. Leyland B *et al.* (2017). Are Thraustochytrids algae? *Fungal Biol.* 121: 835-840

Species	Family	Phylum	PG class	Comments
<i>Penium margaritaceum</i>	<i>Peniaceae</i>	<i>Charophyta</i>	1	
<i>Phaeodactylum tricorutum</i>	<i>Phaeodactylaceae</i>	<i>Bacillariophyta</i>	1	
<i>Porphyridium cruentum</i>	<i>Porphyridiaceae</i>	<i>Rhodophyta</i>	1	
<i>Tetradesmus obliquus</i> (syn. <i>Scenedesmus obliquus</i>)	<i>Scenedesmaceae</i>	<i>Chlorophyta</i>	1	
<i>Tetraselmis striata</i>	<i>Chlorodendraceae</i>	<i>Chlorophyta</i>	1	
Other single-celled organisms				
<i>Polysphondylium pallidum</i> (syn. <i>Heterostelium pallidum</i>)	<i>Dictyosteliidae</i>	<i>Evosea</i> (supergroep Amoebozoa)	1	
<i>Tetrahymena thermophila</i>	<i>Tetrahymenidae</i>	<i>Ciliophora</i>	1	
<i>Ignicoccus hospitalis</i>	<i>Desulfurococcaceae</i>	<i>Crenarchaeota</i>	1	
Multicellular organisms				
<i>Isodiametra pulchra</i>	<i>Isodiametridae</i>	<i>Xenacoelomorpha</i>	1	
<i>Macrostomum hystrix</i>	<i>Macrostomidae</i>	<i>Platyhelminthes</i>	1	
<i>Macrostomum lignano</i>	<i>Macrostomidae</i>	<i>Platyhelminthes</i>	1	
<i>Macrostomum pusillum</i>	<i>Macrostomidae</i>	<i>Platyhelminthes</i>	1	

Dutch Regulations Genetically Modified Organisms

In the Decree on Genetically Modified Organisms (GMO Decree) and its accompanying more detailed Regulations (GMO Regulations) genetically modified micro-organisms are grouped in four pathogenicity (PG) classes, ranging from the lowest pathogenicity Class 1 to the highest Class 4.² The pathogenicity classifications are used to determine the containment level for working with GMOs.

A micro-organism of Class 1 should at least comply with one of the following conditions:

- a) the micro-organism does not belong to a species of which representatives are known to be pathogenic for humans, animals or plants,
- b) the micro-organism has a long history of safe use under conditions without specific containment measures,
- c) the micro-organism belongs to a species that includes representatives of class 2, 3 or 4, but the particular strain does not contain genetic material that is responsible for the virulence,
- d) the micro-organism has been shown to be non-virulent through adequate tests.

A micro-organism is grouped in Class 2 when it can cause a disease in humans or animals whereby it is unlikely to spread within the population while an effective prophylaxis, treatment or control strategy exists, as well as an organism that can cause a disease in plants.

2. Ministerie van Infrastructuur en Milieu. Regeling genetisch gemodificeerde organismen milieubeheer 2013. <https://wetten.overheid.nl/BWBR0035072/2021-10-01> [In Dutch]

A micro-organism is grouped in Class 3 when it can cause a serious disease in humans or animals whereby it is likely to spread within the population while an effective prophylaxis, treatment or control strategy exists.

A micro-organism is grouped in Class 4 when it can cause a very serious disease in humans or animals whereby it is likely to spread within the population while no effective prophylaxis, treatment or control strategy exists.