

DSM position paper on industrial biotechnology

Key messages

DSM is committed to the responsible use of modern biotechnology and is convinced of its benefits. Benefits for people via addressing and solving global societal needs. Benefits for our planet via the transition toward the sustainable use of renewable raw materials and the reduction of required raw materials, energy and waste.

DSM uses GMMs as tools for the manufacturing of a range of products. Our industrial biotechnology production facilities are well contained and controlled; final products do not contain GMMs. DSM can ensure the highest safety standards, since we comply with all relevant regulatory requirements and apply best industry practices in accordance with the most recent insights.

The benefits of responsible use of genetic engineering

Biotechnology is the use of living organisms to make useful products. Traditional examples are the production of beer and wine or baker's yeast for making bread. Since the 1980s, genetic engineering has been improving processes and has helped to create a wide range of products; products that could not be - or were not - efficiently produced before. Genetically engineered micro-organisms are called GMMs. Industrial biotechnology uses micro-organisms, including GMMs, and enzymes to make bio-based products in sectors such as chemicals, food and feed, detergents, paper and pulp, textiles and bioenergy (such as biofuels or biogas). Benefits include the manufacture of more efficient products that are tailored for specific needs as well as higher quality processes and products and more efficient manufacturing processes, with lower impact on the environment.

Genetic engineering is still seen as a relatively new technology and, as with other new developments, there are some concerns about its use. This is something that we at DSM recognize, and we take a responsible stance with regard to all our work in this field.

DSM and industrial biotechnology

Industrial biotechnology, including genetic engineering, is one of the core competences of DSM. DSM uses GMMs as tools to manufacture products that otherwise could not be produced, or were not being manufactured efficiently; we do not sell GMMs. At DSM, we only use micro-organisms with a long history of safe use and we focus on 'contained-use' applications, where GMMs are used in closed systems that are carefully controlled, operated and monitored. DSM has a long tradition in industrial biotechnology and more than 25 years of experience in large-scale processes with GMMs.

A field that has recently attracted considerable attention is 'synthetic biology', an advanced form of engineering applied to biological systems. At DSM, we use chemically synthesized DNA for our genetic engineering activities. We view synthetic biology as an extension of existing genetic engineering technologies, for which an adequate and efficient regulatory framework has been established. Chemically synthesized DNA allows better controlled, more precise, more subtle and more efficient genetic engineering strategies. The term 'synthetic biology' has been used to describe novel scientific concepts, involving the design and construction of novel living organisms from scratch, which DSM acknowledges for academic purposes, but chooses not to be active in itself.

DSM ensures the highest safety standards in its industrial biotechnology operations

DSM operates in the specific area of industrial biotechnology: the systems used are entirely contained and controlled. A potential risk in this area could be the unwanted release of GMMs from these closed systems. To avoid this, DSM complies with all relevant regulatory requirements and applies best industry practices in accordance with the most recent insights. The fact that DSM has had no incidents in over 25 years of use is testimony of DSM's thorough risk control. Furthermore, DSM supports authorization procedures for GMMs that are based on rigorous, science-based safety assessments that are coherent, transparent and predictable, and we will offer to contribute to the advancement of the regulatory framework, in line with scientific progress.

All DSM laboratories and facilities worldwide comply with the same high internal safety standards and DSM executes thorough safety and suitability assessments before any (internal) use. The micro-organisms are only used in contained systems and are made inactive before being processed further. In addition, we ensure and verify that GMMs are inactivated and fully removed and destroyed during the purification process to obtain the final product. DSM only uses micro-organisms classified in the safest class in current legislation (class 1, out of a total of 4 classes). In addition, DSM manages its strains of micro-organisms centrally, to strictly control and monitor their use.

Within DSM, we believe that all stakeholders - including the scientific community, industry, governments, NGOs, and the public - need to engage in open dialogues and debates on effects and benefits of biotechnology. Only in this way will biotechnology be able to develop and reach its full potential, and do so within a framework of effective and responsible policies.