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Risk assessment for contained use of GMOs

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With the development of modern biotechnology, more and more research projects are conducted with molecular biological techniques involving genetically modified organisms (GMOs). However, working with GMOs can have potential negative consequences for human health and the environment in case of misuse or accident; therefore it requires the adoption of specific containment, protective measures and safe work practices. For each contained use, the precise nature and scale of risks are not fully known in advance and the risk involved must be assessed on a case-by-case basis. Biological risk assessment is a process that includes the identification, the probability of occurrence and the severity of a potential negative effect on human health or the environment associated with a specific use of a GMO. A known risk will lead to the implementation of appropriate prevention measures.

The biological risk assessment methodology is based principally on the 3 following stages:

- Identification of potential harmful properties of the GMO by considering the characteristics of the host, vector and donor sequences those are potentially hazardous like pathogenicity or toxicity. This leads to allocate the GMO to an initial class of risk (class 1 to class 4).
- Assessment of the exposure taking into account the nature and scale of the activity.
- Determination of final risk classification of the activity which will lead to the adoption of adequate containment measures.

The risk assessment leads to the determination of containment measures and other protection measures (working practices, safety equipment and biological waste management) to be adopted.

Biography

Do Thi Chuong Dai obtained a Master of Science in Biology from the "Université Libre de Bruxelles" (ULB, Belgium) in 1987. During her career at both the university and the industry (1987-2003) she has gained a lot of experience in molecular biology. She has been working since 2003 as scientist in the Biosafety & Biotechnology Unit of the Belgian Scientific Institute of Public Health. She is involved mainly in the scientific expertise and administrative follow-up of biosafety dossiers regarding the contained use of GMOs and/or pathogens, providing scientific support to the Belgian Competent Authorities.

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