



Biorisk HAZOP

Identify and address potential facility and operational risks

HAZOP is a well known hazard identification technique that ensures comprehensive and systematic coverage of all the relevant areas in the initial design or change of a facility. During a HAZOP the review team searches the design, looking for process deviations and assessing their impact.

Our Approach

The **HAZOP** (HAZard and OPerability study) is a method used to identify, evaluate and understand the potential for, and consequences of design failures. Characteristics of materials and possible deviations in the process or operation are examined in a structured manner. The HAZOP team then discuss if additional safeguards are required to prevent, detect, contain or mitigate the hazards identified. The use of detailed design drawings and guidewords ensures that the entire plant is systematically assessed for hazard and operability issues.

A HAZOP is normally performed during the detailed design of a new facility or when changes occur. Each study begins with the HAZOP team agreeing the guidewords proposed by the HAZOP chairman for applicability to the study. In this way, the guidewords are specifically tailored to the situation being studied.

All deviations (e.g. no flow, high temperature ...) from the design intent are assessed. Causes and consequences are recorded during the sessions, independently of the existing safeguards. After the identification of the hazard, consequences and safeguards a risk ranking can be performed. If the residual risk with safeguards remains unacceptable, recommendations will be made.

A HAZOP leader facilitates the sessions and ensures objectivity within the group. A scribe records the discussions and makes it possible for the leader to focus on chairing the session.

DNV Biorisk has in depth knowledge of laboratory facility process systems, risk assessment techniques and hazard identification methods. We deliver the HAZOP service together with the associated software tools and checklists, risk criteria and other supporting information.

The result of a HAZOP is improved confidence in the design, together with proposed changes to increase safety and operability. This process can result in significantly reduced cost and rework during subsequent construction, commissioning and operation. The outcome of the HAZOP can also be further developed through a SIL (safety integrity level) or AR&M study (Availability, Reliability & Maintainability).

Value delivered

- A structured and detailed review of facility design or proposed changes;
- Identification and documentation of the hazards associated with the facility's operation and how to address them;
- An independent, open and transparent process demonstrating a responsible and structured approach to risk management.