事例研究

MTシステムを用いた化学物質の危険有害性の統合化とその検証

Creation and Verification of an Integrated Index of Chemical Hazards by the MT System

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Chemical hazards are too various for anyone to understand thoroughly; consumers want information that can be grasped as intuitively as possible and has a degree of guaranteed reliability. To create a comprehensive index for evaluating the properties of chemical substances, the use of a calculated distance as a hazard index was studied within the MT system (variation pressure). Results from the Globally Harmonized System of Classification and Labeling of Chemicals (GHS) were taken as the properties of approximately 1 900 chemical substances for which information was provided by Japan's GHS Inter-ministerial Committee. A unit space of low-hazard substances was constructed. How the index was affected by the assignment of numerical values to individual hazards and by the handling of unclassifiable substances or substances with unknown properties, equivalent to missing data, was studied. The resulting chemical hazard index provides easy recognition of hazard level as a number, avoids underestimating the hazards of largely unclassifiable substances with unknown properties, and gives weight to the key hazards, even though GHS weights individual items similarly.

Key words : S/N ratio, Taguchi methods, quality engineering, MT system, index, hazardousness, chemical substances, GHS

1. はじめに

化学物質は，安全で快適な生活を維持するためには欠かせないが，そのためには必然的に有害な物質を使用せざるを得ない。化学物質の性状には，物理化学的な危険性，人の健康への有害性，環境生物への有害性などの多くの分野があり，全てを網羅的に理解することはとても難しい。化学物質に関する社会全体のリスク（社会損失）を低減するためには，社会のほとんどを占める非専門家がより有害性の低いものを選択できるように，使用する化学物質の危険有害性を容易に認識できる指標があることが望ましい。しかし現在の指標[1) 2)]は，専門的で高度な評価と判断のためであることが多く，非専門家への啓発や警告等の情報伝達を目的としたものではない。

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