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|---|-------------------|------------------------------|
| 9 | CAS No.: 126-98-7 | Substance: Methacrylonitrile |
|---|-------------------|------------------------------|

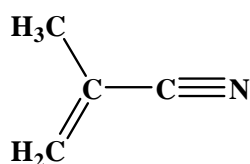
Chemical Substances Control Law Reference No.: 2-1514

PRTR Law Cabinet Order No.: 1-321

Molecular Formula: C₄H₅N

Structural Formula:

Molecular Weight: 67.09



1. General information

The aqueous solubility of this substance is $2.5.4 \times 10^4$ mg/L (25°C), and the partition coefficient (1-octanol / water) (log Kow) is 0.68. The vapor pressure is 71.2 mmHg (= 9.49×10^3 Pa) (25°C). Degradability is judged to be good, and the substance is thought to not be hydrolyzable in the environment (pH 4 - 10).

This substance is a Class 1 Designated Chemical Substance under the Law concerning Reporting, etc. of Releases to the Environment of Specific Chemical Substances and Promoting Improvements in Their Management (PRTR Law). Its primary uses and release sources are as a raw material (resin) for synthetic resin. Production and import quantities under the PRTR law are 10,000 tons.

2. Exposure assessment

Total release to the environment in FY2003 under the PRTR Law came to 0.89 tons, all of which was reported. Release quantities were 0.59 tons released to the atmosphere and 0.30 tons released to water bodies. In addition, 1.5 tons was transferred as waste. Chemical Industry accounted for high levels of reported release to both the atmosphere and public water bodies.

Environmental release quantities were 66% released to the atmosphere and 34% released to water bodies. However, the distribution into the different media in the environment predicted by means of a multimedia model was 2.0% for atmosphere and 97.9% for water bodies.

It was not possible to establish a predicted environmental concentration (PEC) that indicates exposure to aquatic organisms, as environmental concentrations sufficient for assessment have not been obtained.

3. Initial assessment of ecological risk

With regard to acute toxicity, reliable information of a 48-hour EC₅₀ growth inhibition value of 25,400 µg/L was found for the algae *Pseudokirchneriella subcapitata*, a 48-hour EC₅₀ immobilization value of 250,000 µg/L was found for the crustacea *Daphnia magna* (water flea), and a 96-hour LC₅₀ value of more than 100,000 µg/L was found for the fish *Oryzias latipes* (medaka). Accordingly, an assessment factor of 100 was used, and a predicted no effect concentration (PNEC) of 250 µg/L was obtained based on the acute toxicity values. With regard to chronic toxicity, reliable information of a 72-hour no observed effect concentration (NOEC) growth inhibition value of 1,000 µg/L was found for the algae *P. subcapitata*, and a 21-day NOEC reproduction value of 2,200 µg/L was found for the crustacea *D. magna*. Accordingly, an assessment factor of 100 was used, and a PNEC of 10 µg/L was obtained based on the chronic toxicity values. As the PNEC for the substance, a value of 10 µg/L obtained from the chronic toxicity for the algae was used.

As sufficient data for assessment have not been obtained at present, it was not possible to assess the ecological risk. Trends in production quantities, environmental release quantities, etc. of this substance should be monitored, and then a study should be conducted to assess the need for determination of the environmental concentration.

| Hazard assessment (basis for PNEC) | | | Assessment factor | Predicted no effect concentration PNEC (µg/L) | Exposure assessment | | PEC/PNEC ratio | Result of assessment |
|------------------------------------|-----------------|------------------------|-------------------|---|---------------------|--|----------------|----------------------|
| Species | Acute / chronic | Endpoint | | | Water body | Predicted environmental concentration PEC (µg/L) | | |
| Algae | Chronic | NOEC growth inhibition | 100 | 10 | Freshwater | – | – | x |
| | | | | | Seawater | – | – | |

4. Conclusions

| | Conclusions | Judgment |
|-----------------|---|----------|
| Ecological risk | Impossible of risk characterization. Trends in production quantities, environmental release quantities, etc. should be monitored, and then a study should be conducted to assess the need for determination of the environmental concentration. | × |

[Risk judgments] ○: No need of further work ▲: Requiring information collection
 ■: Candidates for further work ×: Impossible of risk characterization