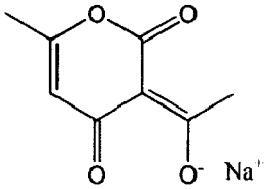
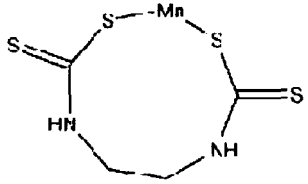
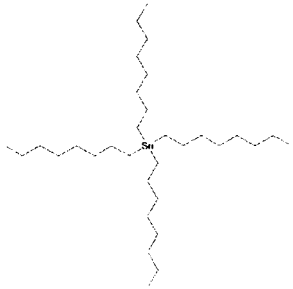
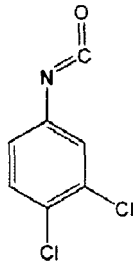
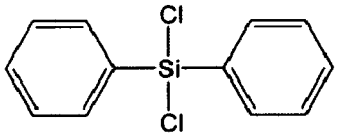
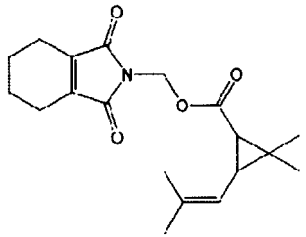
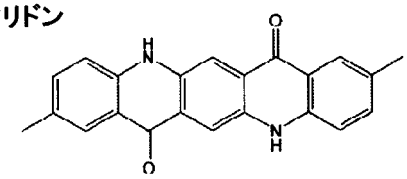
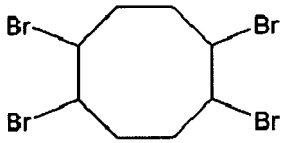
平成17年9月30日
(独)製品評価技術基盤機構
化学物質管理センター

〈参考〉既存化学物質(平成17年9月)分解性QSAR予測結果

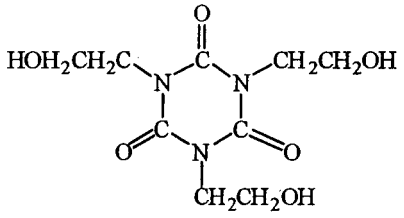
K番号	物質名 (CAS No.) [PRTR番号] 官報公示整理番号	分解度事務局判定案 分解度%(実測値)	①BIOWIN5 (Ver.4.02) 予測値0.5以上が良分解	②BIOWIN6 (Ver.4.02) 予測値0.5以上が良分解	③CERIエキスパート予測(インターネット公開版)	④CATABOL
1625	3-アセト-6-メチル-2-ピロノンナトリウム塩 (4418-26-2) 5-0676 	良分解性 BOD:77%(77,77,77) TOC:99%(99,99,99) HPLC:100%(100,100,100)	良分解性 (予測値0.6150)	良分解性 (予測値0.5948)	良分解性	良分解性 (BOD予測値 60.1±6.3%、 既存物質残留0%)
683B	{[エチレンビス(カルバモジチオアト)](2-)}マンガン (12427-38-2) [PRTR 1-49] 2-1841 	難分解性 BOD:1%(1,1,0) HPLC:100%(100,100,100) 被験物質は変化し、2-イミダゾリジンチオン、1,2-エチレンビスジチオカルバミン酸及び1,3,6-チアジアゼピン-2,7(3H,6H)-ジチオンを生成し、残留した。	難分解性 (予測値-0.0376)	難分解性 (予測値0.0094)	**予測不能**	**予測不能**
1427	テトラオクチルスタンナン (3590-84-9) 2-2270 	難分解性 BOD:2%(3,3,0) HPLC:1%(0,1,3)	**良分解性** (予測値0.5292)	難分解性 (予測値0.0000)	**予測不能**	**良分解性** (BOD予測値 76.1±1.5%、 既存物質残留 2.0%)
1496	イソシアン酸-3,4-ジクロロフェニル (102-36-3) 3-2489 	難分解性 BOD:0%(0,0,0) HPLC:86%(100,100,57) 被験物質は変化して、3,4-ジクロロアニリン及び3,3′,4,4′-テトラクロロジフェニル尿素を生成し、残留した。	難分解性 (予測値0.1898)	難分解性 (予測値0.0483)	難分解性	難分解性 (BOD予測値 5.9±0.9%、 既存物質残留0%)

K番号	物質名 (CAS No.) [PRTR番号] 官報公示整理番号	分解度事務局判定案 分解度%(実測値)	①BIOWIN5 (Ver.4.02) 予測値0.5以上が良分解	②BIOWIN6 (Ver.4.02) 予測値0.5以上が良分解	③CERIエキスパート予測(インターネット公開版)	④CATABOL
1640	ジクロロジフェニルシラン (80-10-4) 3-2634 	難分解性 BOD:0%(0,0,0) G C:100%(100,100,100) 被験物質は加水分解し、ジフェニルシランジオールを生成し、残留した。	難分解性 (予測値0.0410)	難分解性 (予測値0.0271)	難分解性	予測不能
1672	*N*-(3,4,5,6-テトラヒドロフタルイミド)メチル-D,L-シス,トランス-クリサンテメート (7696-12-0) 9-0839 	難分解性 BOD:2%(4,0,1) HPLC:35%(41,33,32) 一部加水分解して、2,2-ジメチル-3-(2-メチル-1-プロペニル)-シクロプロパンカルボン酸(シス,トランス体)及びN-ヒドロキシメチル-3,4,5,6-テトラヒドロキシフタルイミドを生成し、残留した。	難分解性 (予測値0.2986)	難分解性 (予測値0.0486)	難分解性	難分解性 (BOD予測値 11.2±4.1%、 既存物質残留 11.7%)
1703	2,9-ジメチルキナクリドン (980-26-7) 5-1168 	難分解性 BOD:0%(0,0,0) 重量法:3%(6,4,0)	難分解性 (予測値-0.2317)	難分解性 (予測値0.0015)	難分解性	難分解性 (BOD予測値 0.0±0.2%、 既存物質残留 99.2%)
1715	1,2,5,6-テトラブロモシクロオクタン (3194-57-8) 3-2254 	難分解性 BOD:1%(0,2,0) G C:1%(1,0,1)	難分解性 (予測値-0.0449)	難分解性 (予測値0.0000)	難分解性	難分解性 (BOD予測値 0.2±0.3%、 既存物質残留 94.0%)

（人健康影響に係る追加情報）

官報公示整理番号	5-1051	CAS No.	839-90-7
	名　称：１，３，５－トリス（２－ヒドロキシエチル）－１，３，５－トリアジン－２，４，６－（１H，３H，５H）－トリオン		
他の毒性情報	［SIAR（OECD/HPVプログラム）より引用］ 変異原性： Ames試験（TA97, TA98, TA100, TA1535, TA1537）： - (With and without metabolic activation) 染色体異常試験（CHO cells）： - (With and without metabolic activation)		

SIDS INITIAL ASSESSMENT PROFILE

CAS No.	839-90-7
Chemical Name	1,3,5-Triazine-2,4,6(1H,3H,5H)-trione, 1,3,5-tris(2-hydroxyethyl)- (Synonym : Tris(2-hydroxyethyl) isocyanurate)
Structural Formula	

RECOMMENDATIONS

The chemical is currently of low priority for further work.

SUMMARY CONCLUSIONS OF THE SIAR

Human Health

Regarding acute toxicity, the oral LD_{50} of tris(2-hydroxyethyl) isocyanurate in rats is greater than 2,000 mg/kg bw [OECD TG 401]. The acute dust inhalation toxicity test for 8h in rat revealed no symptom and no mortality at 9.32 mg/L and 15 mg/L. Tris(2-hydroxyethyl)isocyanurate is not irritant to eye and skin. No data are available for sensitization.

In the combined repeated dose and reproductive/developmental toxicity test [OECD TG 422] in rats, which was performed at oral doses of 0, 30, 100, 300 and 1,000 mg/kg bw/day for at least 42 days, no deaths or abnormalities in all toxicological parameters were observed in any male and female animals. The NOAEL for repeated dose toxicity in rats is considered to be 1,000 mg/kg bw/day for both sexes.

In the above combined repeated dose and reproductive/developmental toxicity test in rats, the chemical showed no adverse effects on any reproductive/developmental parameters. No morphological abnormalities in external and visceral observation in pups were observed in any of the treated groups. The NOAEL values in reproductive/developmental toxicity for both parents and F_1 offspring are considered to be 1,000 mg/kg bw/day.

Bacterial mutation test [OECD TG 471] and all mammalian *in vitro* tests such as chromosome aberration tests [OECD TG 473 & NTP] and sister chromatid exchange assay [NTP] showed negative results. There is no data available from *in vivo* test.

Environment

As for the distribution of the chemical in the environmental, Fugacity model (level III) calculation shows that the chemical is likely to be distributed into water and soil if released into water, air or soil. Also, based on its high water solubility (820 g/L at 20°C), low LogPow value (-1.63 at 23°C) and low vapor pressure (0.0015 Pa at 50°C), the chemical is most likely distributed into the water phase. The half-life for photo-degradation is estimated to be 13.0 h. The chemical is highly stable in water (OECD TG 111) and is not biodegradable according to OECD test guidelines 301C (0%(BOD)), 301E and 302B (0%(DOC)), respectively. However, bioaccumulation potential of this substance is low based on the results of the bioaccumulation test using carp (*Cyprinus carpio*). In the test, the resulting BCF values were below 0.16 at 2.5 mg/L or 1.6 at 0.25 mg/L of test concentration, respectively.

The acute toxicity values to aquatic organisms were more than 1,000 mg/L for *Selenastrum capricornutum* (72h-NOEC, biomass and growth rate), greater than 1,000 mg/L for *Daphnia magna* (48h-EC_{50}, immobilization) and greater than 100 mg/L for *Oryzias latipes* (96h-LC_{50}, mortality) according to OECD TG 201, 202 and 203, respectively. In the chronic toxicity test to *Daphnia magna*, the 21d-NOEC (reproduction) was more than 100 mg/L (OECD TG 211). As no adverse effects were observed in any tests conducted using three different trophic level species, the chemical is considered to be non-toxic to aquatic organisms.

Exposure

The production volume of tris(2-hydroxyethyl) isocyanurate in 2000 was 6,000 tonnes in Japan and 5,000 tonnes in Germany. The production and the cleaning process of the facility are conducted in a closed continuous line under remote control system.

Mainly, the chemical is used as a monomer for the synthesis of polyesters and thus obtained polyesters are industrially used in thermosetting varnishes and thermosetting paints for metal. It is also used in polymer industry as a stabilizer. The content in polymers is approximately 0.5% or less. One of the uses of such polymers is as exterior building material.

The chemical would not be released into environment via wastewater from production or use (such as varnishes or paints industry) sites because organic solvent is used instead of water for the reaction media or cleaning process. Moreover, the solvent used is concentrated and then the residues are incinerated in a well-equipped facility. Releases from final polyester products are not expected. The chemical might be released from polymers which contain the chemical as a stabilizer. Although no data are available on the amount of the chemical used as a stabiliser, significant exposure is not expected.

The occupational exposure of the chemical might occur via the inhalation of dust or via the dermal route during packing/unpacking processes. However, the intake via dermal route is not expected due to the low value of the LogPow. Practically, workers are obliged to use personal protection equipment (mask, glasses and gloves) during the packing/unpacking process. Thus, the exposure to the chemical via dust inhalation is considered to be negligible.

Polymers containing the chemical as a stabilizer are the only source of the chemical which might cause consumer exposure and indirect exposure in the general population.

NATURE OF FURTHER WORK RECOMMENDED

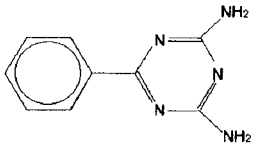
No recommendation.

The chemical is not a candidate for further work because all SIDS endpoints are adequately addressed and the substance has a low toxicity profile.

（人健康影響に係る追加情報）

官報公示整理番号	5-1028	CAS No.	91-76-9
	名　称：　2，4－ジアミノ－6－フェニル－s－トリアジン		
他の毒性情報	[SIAR（OECD/HPV プログラム）より引用] 反復毒性： SD-Rat (25, 250, and 2000 ppm(1.9, 19.0, 173.0mg/kg/day)(混餌投与))、90 日間 NOAEL=250ppm (19 mg/kg bw) 体重増加↓:2000♂♀ 肝-小葉中心性肝細胞肥大・脾臓-髄外造血:2000♂♀ 腎臓-ヘモシデリン沈着:2000♂♀ 副腎-皮質球状層細胞の肥大及び空胞化:2000♂♀ 膵臓-外分泌細胞の変性及び細胞浸潤:2000♂♀ 脾臓-ヘモシデリン沈着:250 以上♂・2000♀ 変異原性： Ames 試験（TA98, TA100, TA1535, TA1537, TA1538）： - (With and without metabolic activation) 染色体異常試験（ヒトリンパ球）： - (With metabolic activation) - (Without metabolic activation, within the solubility limit) + (Without metabolic activation, above the solubility limit) マウスリンフォーマ TK 試験： - (With metabolic activation, within the solubility limit) + (With metabolic activation, above the solubility limit) -(Without metabolic activation) 小核試験（マウス）：陰性 小核試験（マウス）：inconclusive がん原性： Charles-River CD Rat(♂のみ)(500, 1000 ppm(37.5, 75 mg/kg/day) (混餌投与))、18 ヶ月 対照群との有意差なし 体重増加↓：500ppm 以上♂ CD-1mice(2000, 4000 ppm (300, 600 mg/kg/day) (混餌投与))、　18 ヶ月 対照群との有意差なし		

SIDS INITIAL ASSESSMENT PROFILE

CAS No.	91-76-9
Chemical Name	2,4-diamino-6-phenyl-1,3,5-triazine
Structural Formula	

RECOMMENDATIONS

The chemical is currently of low priority for further work.

SUMMARY CONCLUSIONS OF THE SIAR

Human Health

There is no available information on toxicokinetics and metabolism of this substance. The oral LD_{50} of rats was 933 mg/kg for males and 1231 mg/kg for females [OECD TG 401]. The major toxicity was edema in the forestomach. The LC_{50} value in the acute inhalation toxicity was 2.932 mg/L (4 hr, rat) [OECD TG 403]. This substance was not irritating to the skin in rabbits [OECD TG 404] and mildly irritating to the eyes in rabbits. There is no information on skin sensitization.

In the OECD combined repeat dose and reproductive/developmental toxicity screening test by gavage [OECD TG 422], this substance was given at 0, 4, 20 and 100 mg/kg/day to rats for at least 39 days. One male and one female rat died and the body weight gain was decreased in the 100 mg/kg group. Hematological and blood chemical examination showed decreases in the erythrocyte counts and hematocrit values with increased reticulocyte counts, and increases of GOT, GPT and total bilirubin with centrilobular hypertrophy of hepatocyte in the 100 mg/kg group. The severity of these changes, however, were toxicologically not significant or adaptive changes, except for the increase in reticulocyte count whose significance was equivocal. The NOAEL in this study was considered as 20 mg/kg/day.

In the 90-day feeding study of rats at 0, 1.9, 19.0, and 173.0 mg/kg/day [OECD TG 408], the body weight gain was decreased in the high dose group. In the histopathological examination, centrilobular hepatocyte enlargement, an increased severity of extramedullary hemopoiesis in the spleen and hemosiderin pigment accumulation in the kidneys and the spleen, hypertrophy and vacuolation of adrenal zona glomerulosa cells, and degeneration of pancreatic exocrine cells together with associated inflammatory cell infiltrates were observed in the high dose group. At the mid dose, the severity of hemosiderin pigment accumulation in the spleen was also increased moderately in males. This change in the spleen was considered not to be an adverse effect because no other changes were observed at this dose level. Therefore, the NOAEL in this study was considered to be 19 mg/kg/day.

On basis of these two studies, the NOAEL for repeated dose toxicity was considered to be 20 mg/kg/day.

For genotoxicity of this substance, there were two Ames tests, three non-bacterial *in vitro* studies, and two genotoxic *in vivo* studies reported. This substance was not mutagenic in bacteria [OECD TG 471 & 472]. It induced chromosomal aberration in CHL/IU cells with and without an exogenous metabolic activation system even under the soluble concentrations. It also gave a positive response in the human lymphocyte test [OECD TG 473] and the mouse lymphoma TK assay [OECD TG 476] but only under the insoluble dose levels. The cytogenetic effect observed in *in vitro* assays however, could not be reproduced in the micronucleus tests *in vivo* [OECD TG 474]. Based on the weight of evidence, it could be concluded that this substance was not genotoxic *in vivo*.

For carcinogenicity, two dietary studies using male rats and male/female mice for 18 months showed no tumorigenic activity of this substance. However, these studies were considered to be insufficient for assessment of the carcinogenicity because of insufficient testing protocol compared to current test guidelines.

In the OECD combined repeat dose and reproductive/developmental (one generation) toxicity screening test [OECD TG 422], this substance was given for 49 days from 14 days before mating in males and from 14 days before mating to day 3 of lactation in females. At 100 mg/kg, one female died in gestation and another female was not impregnated. Birth index was decreased with increase in stillborns at 100 mg/kg. All pups of two dams at 20 mg/kg and seven dams at 100 mg/kg died due to the lack of nursing activity, and the viability index on day 4 after birth was consequently decreased in these groups. The body weights of pups were also decreased at birth and at day 4 of lactation in the 100 mg/kg group. The decrease of litter size observed at 100 mg/kg seems to be the chemical-induced effect although it is not statistically significant. No malformations or variations were observed in the pups.

From these results, the parental NOAEL of reproductive toxicity was considered to be 100 mg/kg/day for males, and 4 mg/kg/day for females, based on the lack of nursing activity, and the NOAEL of developmental toxicity was considered to be 20 mg/kg/day, based on the decrease of birth index and body weight of pups.

Environment

This substance (2,4-diamino-6-phenyl-1,3,5-triazine) is slightly soluble in water (320 mg/L at 25°C). The vapour pressure of this substance is estimated as very low ($1.6x10^{-5}$Pa at 25°C). This substance would be released into the aquatic environment from waste water, and distributed almost entirely in the water compartment from the calculation using the fugacity model [Mackey level III]. Although this substance is stable in water biotically and abiotically, this substance has a low potential of bioaccumulation based on BCF = 6.4, estimated from log Pow = 1.38.

In acute toxicity to aquatic species, the toxicity to algae [OECD TG 201] was 53.7 mg/L for EC50 (72 hr, *Selenastrum capricornutum*, biomass) and the toxicity to daphnids [OECD TG 202] was 52.0 mg/L for EC50 (48 hr, *Daphnia magna*, immobility). The toxicity to fish [other method] was 99 mg/L for LC_{50} (48 hr, *Leuciscus idus* (L.)).

In chronic toxicity to aquatic species, the toxicity to daphnids [OECD TG 211] was 1.91 mg/L for NOEC (21 day, *Daphnia magna*, reproduction). The toxicity to algae [OECD TG 201] was 24.4 mg/L for NOEC (72 hr, *Selenastrum capricornutum*, biomass).

PNEC = 0.0191 mg/L for the aquatic organisms was calculated from the 21 day – NOEC (1.91 mg/L) for *Daphnia magna* using an assessment factor of 100, because two chronic data (*Daphnia magna* and alga) were available.

Exposure

Production volume of this substance (2,4-diamino-6-phenyl-1,3,5-triazine or benzoguanamine) is estimated 3,000 t/y in Japan and 5,000 t/y world-wide in 2000. The producing countries are Japan, Germany and the People's Republic of China. This substance can be produced in closed systems. The main use is as an intermediate in benzoguanamine-formaldehyde resins whose applications are coatings, paints, thermosetting resins and others. In the case of coatings, the resins are used as outside and/or inside coatings of cans for storing foods and beverages.

The fugacity model suggests that if released from air or soil, the majority of this substance would distribute into the water and soil. It would not distribute into the air and soil from water. From the uses and properties of this substance, estimated exposures are considered in the following three scenarios. The effects are as follows:

(1) Occupational exposure scenario: inhalation of dust without breathing protection in the factory;
Dust level was 0.25 mg/m^3 by measurement at the packing workplace;
EHEinh = 0.027 mg/kg/day and EHEder = 1.7 mg/kg/day (estimate).

In Japan, this substance has been manufactured since 1964, and no persons handling or contacting this substance have experienced any adverse symptoms regarding skin or respiratory organs.

(2) Environmental exposure scenario: emission to aquatic compartment from waste water;
PEClocal water = 0.0176 mg/L (calculation).

(3) Consumer use exposure scenario: intake through migration from can coating of benzoguanamine-formaldehyde resins for storing foods and beverages;
EHE for consumer use was calculated as 0.076 mg/kg/day at the worst scenario based on the migration tests.

NATURE OF FURTHER WORK RECOMMENDED

No recommendation.