Doc. IIIA/ Section A6.12.1/01

BPD Data set IIA/ Annex Point VI.6.12.2

Medical surveillance data on manufacturing plant personnel if available

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1 REFERENCE

1.1 Reference

Bond G.G., Flores G.H., Stafford B.A. and Olsen G.W. (1991)

Lung Cancer and Hydrogen Chloride Exposure: Results from a Nested Case-Control Study of Chemical Workers

J. of Occupational Medicine **33** (9): 958-961

Published

2 GUIDELINES AND QUALITY ASSURANCE (NOT APPLICABLE)

3 MATERIALS AND METHODS

The paper reviews a previously conducted nested case-control study (Bond G.G., Flores G.H., Shellenberger R.J., Cartmill J.B., Fishbeck W.A. and Cook R.R. 1986 Nested case-control study of lung cancer among chemical workers. Am. J. Epidemiol. **124**: 53-66) to evaluate the possible human carcinogenicity of HCl.

The case group comprised all decedents from cancer of the trachea, bronchus, and lungs (n = 308) occurring from 1940 through 1980 among a cohort of 19608 male employees of Dow's Freeport, Texas Operations. Two control groups were chosen, one a decedent and the other a "living" series, from among all other members of the cohort without lung cancer. Each control series consisted of 308 male subjects individually matched to cases on race, year of birth within 5 years, and year of hire. For six agents of primary interest (asbestos, benzene, beryllium, carbon tetrachloride, sulphur dioxide, and wood dust) a certificated industrial hygienist reviewed the jobs and departments listed on the company-maintained work histories of the subjects and then made a judgment about the degree of exposure (low, moderate, or high). A nominal classification (exposed or unexposed) was made for 165 other agents, among them HCl. The same industrial hygienist then estimated an 8-hour time-weighted average (TWA) HCl exposure for each job (0, 0.2 to 0.3 ppm, 0.9 to 2 ppm, and 2.2 to 5.1 ppm) without knowledge of the case or control status of individual subjects. These estimates were made based on the available monitoring data (see Table A6.12.1/01-1) and information on the amount of time required to be spent in the respective job in each area processes. Exposure to HCl was possible in two types of environments: where HCl was produced as a gaseous byproduct of an electrochemical reaction or where HCl was used as a raw starting material for a reaction. In general, workers who held assignments as supervisors, engineers, or clerical workers were classified into the lowest exposure group; foremen and utility workers were judged as moderately exposed; and operators and cell maintenance employees were considered the most heavily exposed.

Duration of exposure to HCl was calculated by summing the time spent on jobs judged to have a TWA exposure above zero. A cumulative exposure score was derived for each subject by multiplying the time spent on each job by the midpoint of the TWA range for that job (0, 0.25, 1.5 and 3.75) and summing across all jobs. Four categories of cumulative exposure (0, 0.1 to 3.9, 4.0 to 12.4 and ≥12.5 ppm-years) were then chosen for analysis based on an examination of the

distribution of all subjects. Finally, an analysis was done that allocated subjects to the highest TWA category they achieved during their career. For the purpose of this analysis, it was necessary to combine the middle and low exposure categories (i.e. <2.0 ppm) because of too few subjects in the middle category. The latency was evaluated by conducting an analysis that excluded all exposures occurring within 15 years of the death of the worker.

Smoking histories were available for 70.8% of the cases and 75.5% of the controls from telephone interview conducted with the subjects themselves or with a proxy. A pack-year index was then calculated for each subject to permit control for potential confounding by smoking.

SAS was used for preparation of data files, and the programs of Rothman and Boice were used to calculate crude and Mantel-Haenszel adjusted relative risks, 95% confidence intervals, and tests of trends where appropriate.

4 RESULTS

Separate analysis with each control group yielded similar results, so the controls were pooled for the purpose of enhancing statistical power. Nearly equal proportions of cases (41.9%) and controls (41.6%) were judged exposed to HCl, yielding a crude relative risk of 1.0 (95% confidence intervals 0.8-1.3). Although pack-years of smoking was clearly positively correlated with lung cancer risk, there was no evidence of confounding or interaction with HCl exposure. Allowing for a 15-year latency period between first exposure to HCl and death actually led to a slightly lower risk estimate (relative risk 0.9, CI 0.7-1.2).The year of first exposure of cases and controls did not show any apparent difference. No relationship between lung cancer risk and duration of exposure was found. Risk of lung cancer as a function of cumulative exposure to HCl was not statistically significant for any of the individual categories, nor was there a trend of increasing risk with increasing exposure. Finally, none of the individual risk estimates nor the trend achieved statistical significance for the risk cancer associated with highest average exposure to HCl.

5 APPLICANT'S SUMMARY AND CONCLUSION

The paper reviews a previously conducted nested case-control study to evaluate the possible human carcinogenicity of HCl.

No evidence of a relationship between occupational exposure to HCl and lung cancer was found, regardless of which of several measures of HCl exposure (duration, cumulative, or highest average intensity) was used for the analysis. These findings, considered together with evidence available from other animal and human studies, support no evidence for a carcinogenic role of HCl in high-level industrial exposures.

Doc. IIIA/ Section A6.12.1/01

Medical surveillance data on manufacturing plant personnel if available

BPD Data set IIA/ Annex Point VI.6.12.2

	Evaluation by Competent Authorities
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	*24.03.2009.*
Materials and Methods	The results obtained from a Nested Case-Control Study of Chemical Workers.
Results and discussion	No evidence of a relationship between occupational exposure to HCl and lung cancer was found, regardless of which of several measures of HCl exposure (duration, cumulative, or highest average intensity) was used for the analysis.
Conclusion	Adopt applicant's version: no evidence for a carcinogenic role of HCl in high-level industrial exposures.
Remarks	-
	COMMENTS FROM ...
Date	*Give date of comments submitted*
Materials and Methods	*Discuss additional relevant discrepancies referring to the (sub)heading numbers and to applicant's summary and conclusion.* *Discuss if deviating from view of rapporteur member state*
Results and discussion	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

Table A6.12.1-1: Summary of HCl Exposure Monitoring Data, Freeport, Texas

Production plant/year	Area measurements (ppm)		Percent of samples >5 ppm			
	Average	Range	Area 1*	Area 2	Area 3	Area 4
South Operations						
1974	6.9	4.5-9.2	9.3	37.2	64.7	16.4
1975	3.5	1.8-4.8	1.3	27.0	45.9	18.9
1976	2.7	1.7-3.9	1.8	14.3	25.0	7.1
1983	NC	NC	5.1	5.2	16.8	6.5
North Operations						
1974	4.6	2.6-8.7	8.8	26.2	38.7	3.8
1975	3.0	1.4-6.6	3.4	17.2	28.7	6.8
1976	2.2	1.2-3.6	4.3	13.0	20.3	14.5
Miscellaneous						
Cell Feed South (1978/1979)	0.5	ND-3.3	NA	NA	NA	NA
Cell Feed North (1979)	0.3	ND-15	NA	NA	NA	NA
Casting South (1980)	3.0	1.3-6.7	NA	NA	NA	NA

*Respiratory protection not likely worn in Area 1 but most likely used in Areas 2, 3 and 4: NC: not calculable; ND: not detectable; NA: not applicable

Doc. IIIA/ Section A6.12.1/02

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Medical surveillance data on manufacturing plant personnel if available

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1 REFERENCE

1.1 Reference

Coggon D., Pannett B. and Wield G. (1996)

Upper aerodigestive cancer in battery manufacturers and steel workers exposed to mineral acid mists.

Occup. Environ. Med. **53**: 445-449

Published

2 GUIDELINES AND QUALITY ASSURANCE (NOT APPLICABLE)

3 MATERIALS AND METHODS

The cohort was identified from personnel records and included 2678 men with definite exposure to acid mists (mainly sulphuric acid), 357 with possible exposure, and 1356 who were unexposed. Mortality was compared with that in the national population by the person-years method. A cohort study and nested case-control study of upper aerodigestive tumours were carried out in men employed since 1950 at two battery plants and two steel works in Britain to assess the risk of cancer from inhalation of mineral acid mists.

Fifteen cases of upper aerodigestive cancer were identified from death certificates and cancer registrations, and their exposure to acids was compared with that of age matched controls (5 per case) from the same plant by conditional logistic regression for the case-nest study. Three levels of exposure to acids were distinguished: zero, low (<1 mg/m^3 sulphuric or hydrochloric acid) and high (≥1 mg/m^3 sulphuric or hydrochloric acid).

4 RESULTS

In follow-up to 31 December 1993, 93% of men were traced, including 1277 who had died. Among the men definitely exposed to acid mists, overall mortality was less than in the national population (standardised mortality ratio – SMR – 0.92, 95% confidence intervals – CI – 0.85-0.98) as was mortality from all cancers (SMR 0.92, CI 0.79-1.05) and specifically from cancer of the larynx (SMR 0.48, CI 0.01-2.70) and lung (SMR 0.98, CI 0.78-1.22).

The risk was moderately increased, compared to controls, for those men who had worked for at least 5 years in jobs entailing exposures to sulphuric or hydrochloric acids in excess of 1 mg/m^3 (OR 2.0, CI 0.4-10).

5 APPLICANT'S SUMMARY AND CONCLUSION

A cohort study and nested case-control study of upper aerodigestive tumours were carried out in men employed since 1950 at two battery plants and two steel works in Britain to assess the risk of cancer from inhalation of mineral acid mists.

Overall mortality as well as mortality from all cancers or specifically from cancers of the larynx and lung was less than in the national

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	population. Limited evidence of a moderate increase in risk was obtained when comparing men who had worked for at least 5 years in jobs entailing exposures to sulphuric or hydrochloric acids in excess of 1 mg/m^3 to controls, however, results indicate that any risk from exposures to sulphuric and hydrochloric acid below 1 mg/m^3 is small.

	Evaluation by Competent Authorities
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	*23.03.2009.*
Materials and Methods	A cohort study and nested case-control study of men employed since 1950 at two battery plants and two steel works in Britain.
Results and discussion	*Adopt applicant's version* - results obtained from research about workers who had worked for at least 5 years in jobs entailing exposures to hydrochloric acids in excess of 1 mg/m^3 to controls, shows that any risk from exposures to hydrochloric acid below 1 mg/m^3 is small.
Conclusion	*Adopt applicant's version.*
Remarks	-
	COMMENTS FROM ...
Date	*Give date of comments submitted*
Materials and Methods	*Discuss additional relevant discrepancies referring to the (sub)heading numbers and to applicant's summary and conclusion.* *Discuss if deviating from view of rapporteur member state*
Results and discussion	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

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Medical surveillance data on manufacturing plant personnel if available

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1 REFERENCE

1.1 Reference

Remijn B., Koster P., Houthuus D., Boleu J., Willems H., Brunekreef B., Biersteker K. and Van Loveren C. (1982)

Zinc chloride, zinc oxide, hydrochloric acid exposure and dental erosion in a zinc galvanizing plant in the Netherlands.

Ann. Occup. Hyg. **25 (3)**: 299-307

Published

2 GUIDELINES AND QUALITY ASSURANCE (NOT APPLICABLE)

3 MATERIALS AND METHODS

A study was made of work place conditions in a hot dip galvanizing plant in the Netherlands. An extended monitoring programme was conducted for hydrochloric acid and zinc fumes. The galvanizing plant employed approx. 60 production workers in a two-shift system. For hydrochloric acid a new sampling method was developed with a sampling time of 5 min. The chloride concentration in the absorption liquid was analysed with a chlorocounter based on titration of chlorine ions with silver ions. By combining this stationary method with the observed activity pattern of the picklers, personal exposures were calculated. Exposures to zinc oxide and zinc chloride were also determined by measuring simultaneously on stationary representative sites respirable suspended particulates (RSP) and total suspended particulates (TSP).

Dental erosion of the workers was assessed by a dentist according to the following classification criteria: Etching: this consisted of a dull, ground-glass appearance of enamel surface without loss of contour; Grade 1 erosion: loss of enamel only; Grade 2 erosion: loss of enamel with involvement of dentine; Grade 3 erosion: loss of enamel and dentine with exposure of secondary dentine.

4 RESULTS

A compilation of the results of the hydrochloric acid measurements is given in Table A6.12.1/03-1. Using lognormal distribution the probability of exceeding the Dutch MAC-C of 7 mg/m^3 was calculated for each site. Calculation of the personal exposure showed that the picklers worked 27% of their time in hydrochloric concentrations above the MAC-C value and remedial action was recommended to the plant. Instead, the probabilities of exceeding the Dutch MAC-TWA value of 5 mg/m^3 for zinc oxide were less than 1%.

Dental erosion was assessed in 38 workers that, based on records, included all workers with the highest exposure to acid. The remaining workers had dentures, while some refused to be examined. In each worker a maximum of 8 teeth (the incisors) were classified according to the above-mentioned criteria. A total of 31 teeth were lacking owing to extraction but no information about the condition of these teeth before extraction was available. Results are summarised in Table A6.12.1/03-2. In 83% of all examined elements and in 89.5% of all examined workers

some grade of erosion was seen. Excluding 20 subjects who showed some grade of erosion in the premolar and molar elements (as dental erosion by inhalation of acids first affects the surface of the teeth most exposed to the atmosphere i.e. incisor teeth), new calculations were made on the basis of a total of 18 workers (see Table A6.12.1/03-3). The small number of workers made a multivariate analysis of data (age, exposure time, function, exposure) impossible. Therefore, a correlation of grade of erosion with duration of exposure could not be established.

5 APPLICANT'S SUMMARY AND CONCLUSION

A study was made of work place conditions in a hot dip galvanizing plant in the Netherlands. An extended monitoring programme was conducted for hydrochloric acid and zinc fumes. Dental erosion of the workers was assessed by a dentist according to a given classification criteria. The galvanizing plant employed approx. 60 production workers in a two-shift system; dental erosion was assessed in 38 workers.

Calculation of the personal exposure to hydrochloric acid revealed that the picklers worked 27% of their time in hydrochloric concentrations above the Dutch MAC-C value of 7 mg/m^3 and remedial action was recommended to the plant.

About 90% of the examined workers were affected by some grade of dental erosion however, the lack of a control group and inconsistency with previous observations made it uncertain whether the erosion was mainly caused by hydrochloric acid exposure.

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	Evaluation by Competent Authorities
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	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	*23.03.2009.*
Materials and Methods	A study was made of work place conditions in a hot dip galvanizing plant in the Netherlands. An extended monitoring programme was conducted for hydrochloric acid and zinc fumes. Dental erosion of the workers was assessed by a dentist according to a given classification criteria.
Results and discussion	The dental erosion was assessed in 38 workers from 60. Calculation of the personal exposure to hydrochloric acid revealed that the picklers worked 27% of their time in hydrochloric concentrations above the Dutch MAC-C value of 7 mg/m^3 and remedial action was recommended to the plant.
Conclusion	Adopt applicant's version.
Remarks	The lack of a control group and inconsistency with previous observations made data uncertain.
	COMMENTS FROM ...
Date	*Give date of comments submitted*
Materials and Methods	*Discuss additional relevant discrepancies referring to the (sub)heading numbers and to applicant's summary and conclusion.* *Discuss if deviating from view of rapporteur member state*
Results and discussion	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

Table A6.12.1/03-1: Results of the HCl measurements

Site*	N	GM (mg/m^3)	GSD	P (%)	95% CI (%)
A	51	5.3	2.09	35	26-46
B	50	4.1	2.00	22	15-31
C	51	2.3	1.82	3	2-6
D	52	1.8	2.00	3	1-5
E	47	3.4	2.29	19	12-28
Between baths	52	12.4	1.82	83	75-89

*: A, B, C, D and E are different sites around the six pickling baths.

GM: geometric mean; GSD: geometric standard deviation; P: probability of exceeding the Dutch MAC-C value of 7 mg/m^3 using lognormal distribution; 95% CI: 95% confidence interval

Table A6.12.1/03-2: Prevalence of dental erosion among 38 workers of a galvanizing plant

Grade	Examined teeth		Examined workers	
	n	%	n	%
0	47	17.2	4	10.6
Etching	0	0	0	0
1	132	48.4	13	34.2
2	94	34.3	21	55.2
3	0	0	0	0
Total	273		38	

Table A6.12.1/03-3: Prevalence of dental erosion among 18 workers of a galvanizing plant, with only frontal elements affected

Grade	Examined teeth		Examined workers	
	n	%	n	%
0	39	30.0	4	22.2
Etching	0	0	0	0
1	70	53.3	6	33.3
2	21	16.2	8	44.4
3	0	0	0	0
Total	130		18	

Doc. IIIA/ Section A6.12.1/04

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1 REFERENCE

1.1 Reference

Kremer A.M., Pal T.M., Boleij J.S.M., Schouten J.P. and Rijcken B. (1994)

Airway hyperresponsiveness, prevalence of chronic respiratory symptoms, and lung function in workers exposed to irritants.

Occup. Environ. Med. **51**: 3-13

Published

2 GUIDELINES AND QUALITY ASSURANCE (NOT APPLICABLE)

3 MATERIALS AND METHODS

The association between occupational exposure to airway irritants and the prevalence of chronic respiratory symptoms and level of lung function, and whether these associations were modified by airway hyperresponsiveness, smoking, and a history of allergy were studies in 668 workers from a synthetic fibre plant in the Netherlands. On the basis of job titles and working department, the state of exposure of all workers was characterised as (Group 1) no exposure, reference group; (Group 2) white collar workers; (Group 3) SO_2, HCl, SO_4; (Group 4) polyester vapour; (Group 5) oil mist and vapour; (Group 6) polyamide and polyester vapour; (Group 7) multiple exposure. The base line survey was performed from April to July 1989, during working days. Respiratory symptoms were recorded with a self administered Dutch version of the British Medical Research Council questionnaire, with additional questions on allergy. Spirometry measurements and histamine challenge were used to determine airway hyperresponsiveness (AHR), defined as a 20% fall in forced expiratory volume in one second at $\leq$ 32 mg/mL histamine. Lung functions parameters (forced vital capacity – FVC – forced expiratory volume in 1 min – FEV_1 – and maximum mid-expiratory flow rate, the forced expiratory flow between 25% and 75% point of the FVC curve – MMEF) were also determined.

The association between exposure groups and prevalence of symptoms was estimated by means of multiple logistic regression; the association with level of lung function was estimated by means of multiple linear regression. The analyses were performed with the Superior Performing Software System/PC + program, version 4.0 (SPSS, Inc. Chicago).

4 RESULTS

Data on the study population are reported in Table A6.12.1/04-1.

Personal sampling (7 hrs time weighed average) showed exposures at concentrations as follows for each exposed group.

Group 3, SO_2, HCl, SO_4: Maximum concentrations of SO_2 vapour 0.30 mg/m^3; of HCl aerosols 2.1 mg/m^3 and of SO_4 aerosols 0.5 mg/m^3. Peak exposures occurred up to 40 mg/m^3 HCl vapour (averaging time a few minutes) and up to 46 mg/m^3 SO_2 vapour (averaging time a few seconds). Monitoring of personal exposure to airborne para-aramide fibres over a 4-year period showed maximum 5 hrs time weighed

average concentrations of 0.11 respirable fibres/cm^3.

Group 4, Polyester vapour: Maximum 5 hrs time weighed average concentrations of total aldehyde vapour 0.04 mg/m^3, primarily consisting of acetaldehyde. No aldehyde exposure could be detected (average time 30 min). In addition, exposures to diphenyl diphenyloxide showed 8 hrs time weighed average concentrations up to 7.3 mg/m^3 under normal conditions (n=29; GM 2.2 mg/m^3) and as a result of an incident up to 48.1 mg/m^3 (n=14; GM 8.5 mg/m^3). Peak exposures occurred up to 60 mg/m^3. Also, during certain operations, workers could be exposed to ethylene glycol vapour.

Group 5, Oil mist and vapour: Monitoring (average time 20-30 sec) near the machines showed respirable oil aerosol up to 1.1 mg/m^3 in normal situations and up to 4.4 mg/m^3 during interruptions. In addition, results of an occupational exposure study showed low concentration of Gram negative bacteria (n=6; GM 47 cfu/m^3), of fungi (n=6; GM 7.5 cfu/m^3), and personal exposure to endotoxin (n=5; GM 64 pg/m^3).

Group 6, Polyamide and polyester vapour: Measurements near the machines showed, for example, 150 min time weighed average concentrations of lactam vapour with a GM of 15.9 mg/m^3 (n=3).Personal sampling (n=26) showed as for the oil mist group (n=6) exposures to low concentrations of diphenyl diphenyloxide (8 hrs time weighed average concentration GM 0.2 mg/m^3) and for both groups exposure to aldehyde vapour was of the same order of magnitude, independent of function tasks (n=25; 8 hrs time weighed average concentration GM 8.4 mg/m^3).

Group 7, Multiple exposures: This group consisted of maintenance engineers who were exposed to different airway irritants depending on location within the plant (oil mist and oil vapour, aldehyde and oligomer vapours, lactam, and soldering fumes, but no acid aerosol).

Compared with the reference group, the prevalence rate of any respiratory symptom was higher in groups 4, 5 and 7 and lower in group 3. In general, a higher prevalence of symptoms was significantly associated with current smoking, airway hyperresponsiveness, and a history of allergy. To estimate the association of the various exposure groups with the presence of respiratory symptoms, multiple logistic regression with simultaneous adjustment for potential confounding factors was used. No differences in prevalence of respiratory symptoms were found between the white collar group (group 2) and the reference group (OR for any symptom 1.0). Compared with the reference group, workers exposed to SO_2, HCl and SO_4 (group 3) had a lower prevalence (OR for any symptom 0.6), and workers exposed to polyester vapour (group 4) had a higher prevalence of chronic symptoms. Investigations on whether the association between the exposure groups and a higher prevalence of respiratory symptoms were influenced by the level of lung function confirmed essentially the same ORs. The associations of airway hyperresponsiveness and a history of allergy with a higher prevalence of symptoms were independent of one another. To assess whether the associations between the exposure groups and a higher prevalence of symptoms was different for current smokers and non-smokers, or for hyperresponsive *vs* normally responsive subjects (effect modification), stratified analyses were performed. The ORs were smaller for non-smokers, suggesting that the difference from the reference group in prevalence of symptoms was greater for smokers than for non-smokers while the use of a more restrictive definition of

symptoms resulted in a stronger association between exposure and prevalence of symptoms for the hyperresponsive subjects. The small numbers of subjects with a history of allergy in the various exposure groups did not allow a similar stratified analysis for subjects with or without a history of allergy.

Multiple linear regression analyses were performed to estimate the association between the exposure groups and the level of lung function with simultaneous adjustment for potential confounding factors. With adjustment for age, length and smoking habit the exposure groups were not significantly associated with a lower level of lung function. Adjustment for airway responsiveness and a history of allergy did not change these results; neither did adjustment for chronic respiratory symptoms. Stratified linear regression analyses showed no indication of a possible interaction between exposure to irritants and current smoking, airway hyperresponsiveness, and the presence of history of allergy. Multiple regression analyses stratified by four duration of employment categories showed no significant association with a lower level of lung function for the first three categories, while in the category of > 10 years of exposure all exposure groups had lower lung function parameters. This result could have been increased as several subjects were excluded from the analyses.

5 APPLICANT'S SUMMARY AND CONCLUSION

The association between occupational exposure to airway irritants and the prevalence of chronic respiratory symptoms and level of lung function, and whether these associations were modified by airway hyperresponsiveness, smoking, and a history of allergy were studied in 668 workers from a synthetic fibre plant in the Netherlands. Workers were assigned to 7 groups on the basis of job titles and working department, characterising the state of exposure. Among these groups, were those exposed to SO_2, HCl and SO_4.

The prevalence rate of any respiratory symptom was lower in this group compared with the reference group but, considering the kind of complex and multiple exposure scenarios for the other groups, a definitive conclusion cannot be drawn from the study data. In general, a higher prevalence of symptoms was significantly associated with current smoking, airway hyperresponsiveness, and a history of allergy. None of the exposure groups showed a significant association with a lower level of lung function. Workers of the polyester vapour and the oil mist and vapour groups with more than 10 years exposure had lower lung functional parameters, but the numbers of workers of both groups were small.

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	Evaluation by Competent Authorities
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	24.03.2009.
Materials and Methods	The association between occupational exposure to airway irritants (HCl) and the prevalence of chronic respiratory symptoms and level of lung function, and whether these associations were modified by airway hyperresponsiveness, smoking, and a history of allergy were studies in 668 workers from a synthetic fibre plant in the Netherlands.
Results and discussion	Adopt applicant's version.
Conclusion	Adopt applicant's version.
Remarks	-
	COMMENTS FROM ...
Date	*Give date of comments submitted*
Materials and Methods	*Discuss additional relevant discrepancies referring to the (sub)heading numbers and to applicant's summary and conclusion.* *Discuss if deviating from view of rapporteur member state*
Results and discussion	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

Table A6.12.1/04-1: Data on study population

Parameter	Reference (n = 180)	White collar (n = 58)	SO_2, HCl, SO_4 (n = 119)	Polyester vapour (n = 94)	Oil mist and vapour (n = 141)	Polyamide and polyester vapour (n = 51)	Multiple exposure (n = 25)	Total (n = 668)
Age (y, mean (range))	31.1 (20-56)	43.9 (27-58)	30.8 (22-57)	32.7 (22-55)	31.2 (22-58)	36.2 (22-56)	36.5 (23-53)	33.0 (20-58)
Height (cm (SD))	180.9 (6.2)	178.9 (6.6)	182.8 (6.4)	182.1 (6.9)	180.6 (5.7)	177.8 (7.1)	177.7 (6.0)	180.8 (6.5)
Duration of total employment (y (SD))	7.0 (7.3)	17.0 (7.9)	6.3 (5.2)	8.0 (6.5)	7.0 (6.3)	10.3 (8.0)	13.4 (10.4)	8.4 (7.5)
Years in current exposure group (n (%))								
≤ 2	68 (38)	12 (21)	39 (33)	13 (14)	58 (41)	11 (22)	-	201 (30)
> 2 ≤ 5	62 (34)	26 (45)	77 (65)	44 (47)	48 (34)	18 (35)	12 (48)	287 (43)
> 5 ≤ 10	35 (19)	11 (19)	3 (3)	27 (29)	22 (16)	13 (25)	6 (24)	117 (18)
> 10	15 (8)	9 (16)	-	10 (11)	13 (9)	9 (18)	7 (28)	63 (9)
Smoking habit (n (%))								
Non-smokers	54 (30)	3 (5)	35 (29)	19 (20)	24 (17)	6 (12)	6 (24)	147 (22)
Ex-smokers	26 (14)	21 (36)	32 (27)	28 (30)	32 (23)	14 (28)	8 (32)	161 (24)
Smokers	100 (56)	34 (59)	52 (44)	47 (50)	85 (60)	32 (63)	11 (44)	360 (54)
Pack-years	6.8 (8.2)	21.2 (11.7)	8.4 (7.7)	6.4 (6.3)	10.8 (8.5)	15.0 (10.2)	13.3 (9.7)	11.2 (9.5)
Allergy (n (%))	22 (12)	7 (12)	17 (14)	12 (13)	18 (13)	4 (8)	7 (28)	87 (13)
AHR (n (%))	47 (26)	15 (26)	21 (18)	26 (28)	25 (18)	12 (24)	5 (20)	151 (23)
%FEV (predicted (SD))	104.6 (11.7)	105.3 (12.6)	106.1 (10.6)	103.8 (11.7)	104.5 (11.8)	103.9 (11.3)	106.3 (12.0)	104.8 (11.6)
FVC (L (SD))	5.655 (0.718)	5.233 (0.848)	5.878 (0.793)	5.668 (0.795)	5.636 (0.715)	5.334 (0.826)	5.348 (0.742)	5.620 (0.783)
FEV_1 (L (SD))	4.575 (0.643)	4.144 (0.719)	4.750 (0.633)	4.552 (0.665)	4.557 (0.664)	4.270 (0.710)	4.338 (0.622)	4.530 (0.679)
MMEF (L/s (SD))	4.620 (1.310)	4.123 (1.327)	4.747 (1.232)	4.434 (1.292)	4.522 (1.230)	4.221 (1.188)	4.442 (1.149)	4.530 (1.286)

Doc. IIIA/ Section A6.12.2/01

BPD Data set IIA/ Annex Point VI.6.12.2

Direct observation, e.g. clinical cases, poisoning incidents if available

Official use only

1 REFERENCE

1.1 Reference

Yanturali S., Aksay E. and Atilla R. (2005)
Acute Myocardial Infarction after Hydrochloric Acid Ingestion
The Mount Sinai J. of Medicine **72** (6): 409-412
Published

2 GUIDELINES AND QUALITY ASSURANCE (NOT APPLICABLE)

3 MATERIALS AND METHODS

The paper reports a fatal case of a 63-year old female who presented at the emergency department (ED) after having ingested 250 mL of liquid acid of unknown concentrations in a suicide attempt an hour earlier. Her medical history included primary coronary intervention and stent implantation to the left anterior descending coronary artery because of acute anteroseptal myocardial infarction nine months earlier. She was complaining of epigastric pain.

4 RESULTS

The patient's vital signs at the ED were as follows: blood pressure 153/87 mm Hg, pulse rate 86 beats/min, respiration 34 breaths/min, and pulse oxymetry 97%. Examination revealed oropharyngeal erythema and epigastric tenderness. Bright red drainage was observed after gastric lavage and suction by a nasogastric tube. Initial ECG revealed QS in leads V1 to V3 without ST segment or T wave abnormality. Laboratory studies, including complete blood count, electrolytes, and kidney function tests were within normal limits, except for leukocytosis and hyperchloraemia. Arterial blood gas (ABG) analysis exhibited metabolic acidosis. The patient suffered severe chest pain one hour after presentation to the ED. The ECG showed ST segment elevation at inferolateral leads and Acute Myocardial Infarction (AMI) was diagnosed. After therapeutic treatments, she underwent percutaneous coronary intervention. The coronary angiogram had revealed 80% luminal narrowing in both the right coronary artery and left anterior descending artery, without intraluminal thrombus. TIMI III flow was detected in all coronary arteries. There was no post-procedure intracoronary occlusion, so no further intervention was undertaken After coronary angiography, ST segment elevation decreased to 0.5 mm on ECG. The patient was transferred to the coronary care unit (CCU). The patient's condition continued to deteriorate during her hospital stay. Despite administration of sodium bicarbonate, lactic acidosis was persistent. She developed hypotension shortly after ED presentation and remained hypotensive. Hyperkalemia developed 3 hours after presentation. In the CCU, the patient was intubated due to decreased level of conciousness. Although metabolic acidosis resolved with the treatment, the patient developed bradycardia and asystole one hour after intubation. She expired 5 hours after initial presentation.

Doc. IIIA/ Section A6.12.2/01 BPD Data set IIA/ Annex Point VI.6.12.2	Direct observation, e.g. clinical cases, poisoning incidents if available

5 APPLICANT'S SUMMARY AND CONCLUSION

A fatal case report is given, where a 63-year old female ingested 250 mL of acid of unknown concentration. The authors conclude that airway management, correction of acidosis, recognition and treatment of early fatal complications, especially massive tissue necrosis, hollow viscous perforation, acute renal failure, and haemolysis are cornerstones of acute acid ingestion management. In cases that present early, gastric lavage and suction may be recommended to prevent acidosis due to absorption of more ingested acid. Physicians should be alert to acute myocardial infarction during the course of acid ingestion, especially in patients with known coronary artery disease or multiple coronary risk factors.

Evaluation by Competent Authorities	
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	*24.03.2009.*
Materials and Methods	A fatal case report.
Results and discussion	Adopt applicant's version.
Conclusion	The authors conclude that airway management, correction of acidosis, recognition and treatment of early fatal complications, especially massive tissue necrosis, hollow viscous perforation, acute renal failure, and haemolysis are cornerstones of acute acid ingestion management. *Adopt applicant's version. or include revised version*
Remarks	*" INGESTED 250 ML OF LIQUID ACID OF UNKNOWN CONCENTRATIONS"*
	COMMENTS FROM ...
Date	*Give date of comments submitted*
Materials and Methods	*Discuss additional relevant discrepancies referring to the (sub)heading numbers and to applicant's summary and conclusion.* *Discuss if deviating from view of rapporteur member state*
Results and discussion	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

Doc. IIIA/ Section A6.12.2/02

BPD Data set IIA/ Annex Point VI.6.12.2

Direct observation, e.g. clinical cases, poisoning incidents if available

Official use only

1 REFERENCE

1.1 Reference

Muñoz Muñoz E., Bretcha Boix P., Collera Ormazabal P., Rodriguez Santiago J., Gonzalez Pons G., Veloso Veloso E. and Marco Molina C. (1998)

Swallowing of hydrochloric acid:study of 25 cases.

Rev. Esp. Enferm. Dig. **90**(10): 701-704

Published

2 GUIDELINES AND QUALITY ASSURANCE (NOT APPLICABLE)

3 MATERIALS AND METHODS

The paper reviews the experience gathered between November 1984 and September 1997 at the Hospital Mutua de Terrassa in Barcelona on 25 cases of patients who had ingested hydrochloric acid, in order to identify the most important prognostic factor. The most frequently used substances were bleach and hydrochloric acid solutions under the brand names Sulfamant (24% hydrogen chloride) and Sulfaman (32% hydrogen chloride).

The average age of the patients was 51 years (26-74), 15 subjects were females and 10 males. All but one were suicide attempts. It was possible to establish the amount of hydrochloric acid swallowed and the time between the intake and hospital admission for 21 patients.

19 patients were operated on immediately (group 1), while the other 6 were managed conservatively (group 2).

4 RESULTS

Group 1

The average ingested dose was approx. half a glass i.e. 100 mL (80-200) and the average time between the intake and decision to operate was 75 minutes (30-230). In all cases lesions of the oropharyngeal tract was evident (oedema, erythema, pillar, pharynx and uvula ulcers), characteristic smell was noted, and metabolic acidosis with pH values between 7.2 and 6.9 was detected.

16 cases showed severe systemic symptoms (stupor, signs of peripheral hypoperfusion or shock, and signs of diffuse peritoneal irritation not always appreciable) and immediate laparatomy without prior gastroscopy was decided. 3 patients were explored by gastroscopy due to difficulty of the clinical evaluation (a 8-month pregnant woman) or ignorance of the product swallowed (a patient with known hepatic cirrhosis treated at first for hepatic encephalopathy and a psychotic patient suspected of drug overdose). Gastroscopy revealed oesophagitis and pan-gastritis with grade III lesions (deep, extended ulcers). In 7 cases the laparatomy showed a massive gastric necrosis without perforation, or duodenum-pancreatic impairment and variable macroscopic lesions of the abdominal oesophagus (ranging from oedema to blackness). These 7 underwent a total gastrectomy, oesophagostomy without thoracotomy, cervical oesophagostomy and a

feeding and jejunostomy.

The remaining 12 cases of group 1 showed massive gastric necrosis, sometimes with perforation, and necrosis of the duodenum-pancreatic frame, first loop of jejunum, and blackness of the abdominal oesophagus. 8 of these cases were subjected to massive resections of the necrosed structure.

Group 2

In the 6 patients the average ingested dose was 30 mL (20-40) and the average time between the intake and hospital admission was 45 minutes (30-90).

The main clinical signs were odynophagia, epigastric pain without signs of peritoneal irritation, lack of systemic symptoms, low lesions of the oropharyngeal tract (flushing and oedema without ulcerations), and pH within the normal range. Gastroscopy showed lesions of the oesophagus and stomach, predominantly grade I and II at antrum (hyperaemic mucosa and superficial ulcerations). All the patients were treated with total parenteral nutrition, anti-H2, antibiotics, and added corticoids in 1 case, because of the extent of the oesophagus damage.

The overall mortality amounted to 48% (12 cases), all of group 1. The common characteristic among these patients was the necrosis of the duodenum-pancreatic frame. Most of the patients died during or close to the operation. 4 patients died later (average 35 days), mainly because of septic respiratory and/or abdominal complications.

The 7 patients of group 1 which did not present with necrosis of the duodenum survived. In two patients, a laryngectomy was performed in the posterior reconstructive time using a coloplasty.

Of the 6 patients of group 2, 3 were subjected to an operation because of impassable antropyloric stenosis. The 3 remaining subjects, for whom the ingested dose was minimal (average 25 mL), completely recovered following the conservative treatment.

5 APPLICANT'S SUMMARY AND CONCLUSION

In a study reviewing 25 cases of hydrochloric acid ingestion in suicide attempts (with a single exception), a total of 12 patients died (48%). The common characteristic in these cases was the necrosis of the duodenum-pancreatic frame.

Intake of concentrated hydrochloric aqueous solutions (24-32%) produces a rapid, progressive necrosis of the digestive tract, the extent and severity depending fundamentally on the quantity of the acid ingested, time in contact with the viscera and the presence of food or tamponing substances in the gastric cavity.

Endoscopic exploration helps to confirm the diagnosis and evaluate the degree of damage however, in case of massive swallowing, endoscopy could take too long. The indication of immediate laparatomy can be established on the basis of clinical criteria, and the operation should aim to prevent necrosis of the duodenum-pancreatic frame.

Doc. IIIA/ Section A6.12.2/02

Direct observation, e.g. clinical cases, poisoning incidents if available

BPD Data set IIA/ Annex Point VI.6.12.2

	Evaluation by Competent Authorities
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	*24.03.2009.*
Materials and Methods	INVESTIGATION OF 25 CASES OF PATIENTS WHO HAD INGESTED HYDROCHLORIC ACID
Results and discussion	*Adopt applicant's version.*
Conclusion	The common characteristic in these cases was the necrosis of the duodenum-pancreatic frame.
Remarks	-
	COMMENTS FROM ...
Date	*Give date of comments submitted*
Materials and Methods	*Discuss additional relevant discrepancies referring to the (sub)heading numbers and to applicant's summary and conclusion.* *Discuss if deviating from view of rapporteur member state*
Results and discussion	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

Doc. IIIA/ Section A6.12.2/03

BPD Data set IIA/ Annex Point VI.6.12.2

Direct observation, e.g. clinical cases, poisoning incidents if available

Official use only

1 REFERENCE

1.1 Reference

Buchanan I.B., Campbell B.T., Peck M.D. and Cairns B.A. (2005)

Chest Wall Necrosis and Death Secondary to Hydrochloric Acid Infusion for Metabolic Alkalosis

Southern Medical Journal **98** (8): 822-824

Published

2 GUIDELINES AND QUALITY ASSURANCE (NOT APPLICABLE)

3 MATERIALS AND METHODS

The paper reports of a case of a 53-year old female who received a fatal chemical burn due to extravasation from a subclavial central venous catheter of hydrochloric acid infused to correct severe metabolic alkalosis.

The patient was a 53-year-old, moderately obese female initially admitted to a referring facility with gallstone pancreatitis. On hospital day 2 the patient became tachypneic and had respiratory acidosis accompanied by hypotension and oliguria. By hospital day 8, the patient had *Pseudomonas pneumonia* and anuric renal failure and dopamine infusion was used for haemodynamic support. As a result of anuric renal failure, the patient was started on continuous veno-venous haemodialysis (CVVHD). On hospital day 10, after 2 days on CVVHD with citrate used as an anticoagulant, the patient became markedly alkalotic (pH 7.58) and was started on a continuous infusion of HCl (neither concentration nor rate were documented in the records) through the proximal port of a left subclavian triple-lumen catheter, whose initial proper position, with the tip in the superior vena cava, had been verified by chest radiography. On hospital day 20 the left subclavian line was changed over a wire and the radiograph was to be checked for position but the report for this radiography was not available nor was there any mention of the results in the progress report.

4 RESULTS

On hospital day 23 the patient was noted to have a focal area of blistering under and around the left breast that expanded over the course of 24 hrs until much of the left anterior chest was erythematous. At this time, the chest radiography demonstrated the tip of the catheter in the central left subclavian vein and a loop of the catheter in the left infraclavicular space, presumably positioning the proximal port of the catheter, through which HCl was being infused, in the subcutaneous space. At this time it was realised that the tissue erythema was due to a chemical burn from the HCl, and the patient was taken to the operating room for the first of a series of debridements of necrotic tissue, which would eventually include an area that extended from the left antebranchial fossa over the anterior arm cephalad to the clavicle and then across the chest to include most of the abdomen. Posteriorly, the wound extended to the midline throughout the thoracic and lumbar regions. All skin and subcutaneous tissues in these areas were debrided,

along with the pectoralis major and minor and the latissimus muscle. In addition, the left subclavian vein was ligated and the subclavian artery was exposed at the base of the wound.

One week later the patient was transferred to the facility of the authors, remaining in renal failure and on CVVHD. Eventually she was taken to the operating room for ligation of the subclavial artery, followed by coverage with a deltoid muscle flap. Despite continued aggressive therapy with broad-spectrum antibiotics and advanced ventilator treatment, the patient continued to deteriorate and because of her dismal prognosis and her family's wishes, support was withdrawn and the patient died.

5 APPLICANT'S SUMMARY AND CONCLUSION

The paper reports the case of a 53-year old female who received a fatal chemical burn due to extravasation from a subclavial central venous catheter of hydrochloric acid infused to correct severe metabolic alkalosis. Due to an incorrect position of the catheter, HCl was infused into subcutaneous space and caused massive necrosis of an area that extended from the left antebranchial fossa over the anterior arm cephalad to the clavicle and then across the chest to include most of the abdomen. Posteriorly, the wound extended to the midline throughout the thoracic and lumbar regions. All skin and subcutaneous tissues in these areas were debrided, along with the pectoralis major and minor and the latissimus muscle. In addition, the left subclavian vein was ligated and the subclavian artery was exposed at the base of the wound.

The few case studies in the literature suggest that when properly administered as a 0.1 to 0.2N solution, HCl is not associated with any significant adverse effect. Further, these reports indicate that HCl therapy can be effective in correcting alkalosis as well as improving oxygenation and Pa_{CO2} in patients with metabolic alkalosis and coexistent respiratory acidosis, as was the case of the patient in the case reported.

This is the first reported fatal complication of HCl infusion in which HCl extravasated into the subcutaneous space due to improper line placement. Simple precautions such as infusion of these substances into more distal catheter ports and at least daily assessment of correct placement of the central line are major means to reduce the chance of this type of devastating complication.

Doc. IIIA/ Section A6.12.2/03

Direct observation, e.g. clinical cases, poisoning incidents if available

BPD Data set IIA/ Annex Point VI.6.12.2

	Evaluation by Competent Authorities
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	*24.03.2009.*
Materials and Methods	*REPORTS THE CASE OF A 53-YEAR OLD FEMALE WHO RECEIVED A FATAL CHEMICAL BURN DUE TO EXTRAVASATION FROM A SUBCLAVIAL CENTRAL VENOUS CATHETER OF HYDROCHLORIC ACID INFUSED TO CORRECT SEVERE METABOLIC ALKALOSIS.*
Results and discussion	*Adopt applicant's version.* The few case studies in the literature suggest that when properly administered as a 0.1 to 0.2N solution, HCl is not associated with any significant adverse effect. Further, these reports indicate that HCl therapy can be effective in correcting alkalosis as well as improving oxygenation and Pa_{CO2} in patients with metabolic alkalosis and coexistent respiratory acidosis, as was the case of the patient in the case reported.
Conclusion	Adopt applicant's version.
Remarks	-
	COMMENTS FROM ...
Date	*Give date of comments submitted*
Materials and Methods	*Discuss additional relevant discrepancies referring to the (sub)heading numbers and to applicant's summary and conclusion.* *Discuss if deviating from view of rapporteur member state*
Results and discussion	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

Doc. IIIA/ Section A6.12.2/04

BPD Data set IIA/ Annex Point VI.6.12.2

Direct observation, e.g. clinical cases, poisoning incidents if available

Official use only

1 REFERENCE

1.1 Reference

Kanne J.P., Gunn M. and Blackmore C.C. (2005)

Delayed Gastric Perforation Resulting from Hydrochloric Acid Ingestion

AJR **185**: 682-683

Published

2 GUIDELINES AND QUALITY ASSURANCE (NOT APPLICABLE)

3 MATERIALS AND METHODS

The paper reports of a case of a 29-year old man with schizophrenia presented to the emergency department with abdominal pain immediately after ingesting approx. 200 mL of cleaning solution containing 36% hydrochloric acid.

4 RESULTS

Initial unenhanced computer tomography of the chest, abdomen, and pelvis showed an intact stomach and a small amount of free intraperitoneal fluid. Direct endoscopy showed mucosal injury in the oropharynx, hypopharynx, and supraglottic regions, and diffuse caustic injury to the oesophagal mucosa. Because of worsening clinical status, a contrast-enhanced computer tomography was performed 2 days later, showing gastric necrosis and perforation. The patient died shortly thereafter.

5 APPLICANT'S SUMMARY AND CONCLUSION

The paper reports of a case of a 29-year old man with schizophrenia presented to the emergency department with abdominal pain immediately after ingesting approx. 200 mL of cleaning solution containing 36% hydrochloric acid. Direct endoscopy showed mucosal injury in the oropharynx, hypopharynx, and supraglottic regions, and diffuse caustic injury to the oesophagal mucosa while computer tomography showed an intact stomach and a small amount of free intraperitoneal fluid. Contrast-enhanced computer tomography was performed 2 days later, showing gastric necrosis and perforation. The patient died shortly thereafter.

Doc. IIIA/ Section A6.12.2/04

Direct observation, e.g. clinical cases, poisoning incidents if available

BPD Data set IIA/ Annex Point VI.6.12.2

	Evaluation by Competent Authorities
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	24.03.2009.
Materials and Methods	REPORTS OF A CASE OF A 29-YEAR OLD MAN WITH SCHIZOPHRENIA PRESENTED TO THE EMERGENCY DEPARTMENT WITH ABDOMINAL PAIN IMMEDIATELY AFTER INGESTING APPROX. 200 ML OF CLEANING SOLUTION CONTAINING 36% HYDROCHLORIC ACID.
Results and discussion	*Adopt applicant's version.*
Conclusion	Contrast-enhanced computer tomography was performed 2 days later, showing gastric necrosis and perforation.
Remarks	-
	COMMENTS FROM ...
Date	*Give date of comments submitted*
Materials and Methods	*Discuss additional relevant discrepancies referring to the (sub)heading numbers and to applicant's summary and conclusion.* *Discuss if deviating from view of rapporteur member state*
Results and discussion	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

Doc. IIIA/ Section A6.12.2/05

BPD Data set IIA/ Annex Point VI.6.12.2

Direct observation, e.g. clinical cases, poisoning incidents if available

Official use only

1 REFERENCE

1.1 Reference

Kilburn H.K. (1996)

Effects of a Hydrochloric Acid Spill on Neurobehavioral and Pulmonary Function

JOEM **38** (10): 10181025

Published

2 GUIDELINES AND QUALITY ASSURANCE (NOT APPLICABLE)

3 MATERIALS AND METHODS

The paper reports an exposure incident that occurred on August 1993 in Louisiana where a container truck leaked 800 L of hydrochloric acid near a mobile home park (within 50 yards). The investigating officer and residents became acutely ill with burning and tearing eyes, burning throats, headache, chest pain, shortness of breath, and flu-like complaints.

Within a year after the incident, the sheriff's officer developed a serious impairment of his gait and balance, a sharp decrease in memory, left-sided weakness, headaches, and loss of the ability to concentrate. Similar memory loss, headaches, and respiratory illness in the sheriff's officer who arrived second in the place of spill and among people in the zone downwind of the HCl release led to further investigation.

Twenty months later (April 1995), 45 exposed adult subjects and 56 age-matched referents underwent neurobehavioral testing (including balance, reaction time, blink-reflex latency, colour discrimination, grip strength, cognitive function, perceptual motor speed, recall, and long-term memory), physiologic and psychological tests, and spirometry. They also completed health questionnaires and a profile of mood states in which each subject self-judged the emotional status from the week preceding the test date.

All scores and computed data for sway, for blink and for reaction time were entered into a Tri-Star 486 EISA bus computer and descriptive and analytical computations – including Student's t-test, analysis of variance for comparison of means, and stepwise linear regression for assessing contributions of factors to effects and modelling – used Stata Statistical Soft ware. Statistical significance was defined as $p<0.05$ and coefficients in regression analysis.

Effects of exposure were also analysed by covariant analysis using regression equations based on the unexposed referent subjects for each test. This technique adjusted for the effects of differences in age, educational level, and gender, and produced p values to check against those from the comparisons of group mean.

Duration of residence after the HCl spill in 1993 was examined in these covariant models, as were occupational chemical exposures and personal factors, such as alcohol ingestion.

Doc. IIIA/ Section A6.12.2/05

BPD Data set IIA/ Annex Point VI.6.12.2

Direct observation, e.g. clinical cases, poisoning incidents if available

4 RESULTS

Demographic data and neurobehavioral function scores for the whole exposed and referent groups of adult are summarised in Table A6 12.2/05-1.

The mean ages of both groups of adults were 35 years, with no difference, and their mean educational levels of 10.6 years in the exposed group and 11.8 years in the unexposed referents were different.

Men's and women's heights, weights, and grip strengths by gender did not differ between groups.

Simple and choice reaction times were significantly delayed in the exposed group compared with referents. Balance, measured as sway speed with eyes open and closed, was significantly more rapid in the exposed group. Analysis by comparison of means showed significant differences for digit symbol test results in the cognitive function domain but not for culture-fair A or vocabulary results. In the perceptual motor-speed domain, trail-making B results were significantly different, as were finger-writing errors on the left side, but pegboard and trail-making A test results were not different. The only difference in the recall and long-term memory domains was a difference in recall of digit forwards, suggesting that memory and recall were not affected by the exposure. The affective scores (POMS scores) were significantly different, with components tension, depression, anger, fatigue, and confusion all significantly elevated and vigour significantly decreased in the exposed subjects. Because of the observation that women were more likely to be at home during the hours of the initial exposure, women were analysed separately confirming the difference shown for the entire cohort and adding differences for the culture-fair battery in the cognitive domain, a difference for trail-making A in the perceptual motor domain, and visual recall measurements in the recall domain.

The symptom-frequency scores for 33 of 35 respiratory, neuro-behavioural, general, and vegetative-function symptoms were all significantly greater in the exposed group (Table A6.12.2/05-2), with the exception of two rare symptoms, loss of consciousness and decreased alcohol tolerance that were not different.

The results of the American Rheumatisms Association lupus erythematosus questionnaire showed differences of significance for cold and numb fingers, excessive sun rash, painful breathing, and hair loss, but not for anaemia, protein in urine, seizures, rash on the cheeks, or mouth ulcers.

Respiratory symptoms were much more common in the exposed group, and included production of phlegm, shortness of breath while walking and when climbing stairs, and shortness of breath with wheezing. The spirometric measurements (Table A6.12.2/05-3) showed that vital capacity was decreased in both the exposed and referent groups (as was 1-second forced expiratory volume) to 87% and 84% of predicted, respectively. The forced expiration midflow rates at 25 to 75% of the vital capacity were 77% on exposed subjects and 75% in referent subjects, and terminal flows (forced midexpiratory flow rates at 75 to 85% of vital capacity) were similar at 76% and 74%, respectively. Thus objective evidence of difference in pulmonary function was not seen, but both groups were significantly below the baseline referent population. However, the exposed children's pulmonary functions were

reduced compared with referents.

The examination for confounding by exposure to a variety of chemicals and occupations, pesticides, solvents, and other industrial operations showed that more exposed subjects than referent subjects had been involved at work in chemical refining and exposure to solvents, and in spray painting. The analysis of these factors by regression equations, which included age and other significant coefficients, showed that they did not contribute to the variation in the tests.

Although no measurements of HCl levels were made during the incident, balance scores, pulmonary midflow rates, and reaction times were more abnormal in those subjects who lived closest to the site of the spill. The 50% of exposed subjects within the visual-drift profile of the cloud of fumes from the site of the HCl spill, as mapped by the mobile home court occupants, showed greater impairment of balance with eye open than did those subjects who lived further away or in other directions ($p<0.1$). This proximate group showed a trend for impairment of simple and choice reaction times at a 10% level of significance. A similar trend with proximity was noted for abnormality of pulmonary midflow expressed as percentage of predicted (adjusted for age, sex, height, and history of cigarette smoking).

The proband for the study, the sheriff's officer who first responded to the spill and who was studied 6 months before the general study and then re-measured, deteriorated between the time of the two examinations.

5 APPLICANT'S SUMMARY AND CONCLUSION

The paper reports the results of neurobehavioural examination and testing gathered for the first time in subjects who were exposed environmentally to HCl due to a large spill occurring 20 months earlier. Impaired neurobehavioural performance in the exposed subjects was recorded. Evidence of a proximity effect, previously seen for pulmonary responses, was also observed, with greater abnormalities of balance, reaction time, and pulmonary midflow rates recorded in subjects within the visual-drift profile of the cloud of fumes from the site of the HCl spill.

The course of the sheriff's officer who first responded to the spill suggests a slow dying-back of axon or other chronic progressive toxic effect, resembling accumulative disorders rather than that expected for a single acute exposure to toxic agents.

Based on the chemical similarity of HCl to chlorine, the author forms the hypothesis of mechanism similar to that of chloride for detrimental central nervous system effects. As progressive deterioration has been observed after exposures to chlorine, formaldehyde and hydrogen sulfite as well, the combination of chlorine with available circulating compounds, particularly carbon fragments, to make chlorinated derivatives as chloramines and chloroform is claimed as another possible mechanism.

Doc. IIIA/ Section A6.12.2/05

Direct observation, e.g. clinical cases, poisoning incidents if available

BPD Data set IIA/ Annex Point VI.6.12.2

	Evaluation by Competent Authorities
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	*24.03.2009.*
Materials and Methods	Reports of the results of neurobehavioural examination and testing gathered for the first time in subjects who were exposed environmentally to HCl due to a large spill occurring 20 months earlier.
Results and discussion	*Adopt applicant's version.*
Conclusion	*Adopt applicant's version.*
Remarks	-
	COMMENTS FROM ...
Date	*Give date of comments submitted*
Materials and Methods	*Discuss additional relevant discrepancies referring to the (sub)heading numbers and to applicant's summary and conclusion.* *Discuss if deviating from view of rapporteur member state*
Results and discussion	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

Table A6.12.2/05-1: Demographic data and neurobehavioural function scores for exposed and referent groups of adult

Parameter	Exposed (n = 45)		Referents (n = 56)		p value
	Mean	SD	Mean	SD	
Age	34.6	13.4	34.9	11.3	0.9
Educational level (years)	10.6	204	11.8	1.3	0.002
Simple reaction time (ms)	389	174	280	59	0.0001
Choice reaction time (ms)	619	193	479	66	0.0001
Balance (minimum, cm/s)					
Eyes open	0.81	0.66	0.66	0.12	0.022
Eyes close	1.65	1.12	1.10	0.27	0.004
Blink supraorbital (ms)					
Right	13.4	2.3	12.9	2.2	0.318
Left	13.2	2.0	12.8	2.4	0.462
Blink glabellar tap (ms)					
Right	14.1	2.0	14.0	1.6	0.826
Left	14.2	2.1	14.2	2.1	0.976
Colour score	12.1	2.4	11.6	2.0	0.250
Cognitive function score					
Culture fair A	25.6	8.2	27.2	7.2	0.304
Vocabulary	15.7	7.7	16.7	7.3	0.487
Digit symbol	46.3	15.3	61.3	13.9	0.0001
Perceptual motor speed					
Pegboard (s)	76.9	21.9	70.4	20.5	0.132
Trail-making A (s)	46.5	25.2	73.9	23.1	0.078
Trail-making B (s)	90.8	44.4	67.7	24.0	0.001
Fingertip writing errors					
Right	4.7	4.5	3.3	3.4	0.09
Left	4.0	4.2	2.5	2.9	0.04
Recall score					
Story 1	9.5	3.8	9.6	4.0	0.869
Story 2	9.4	4.2	9.3	4.0	0.934
Visual design	31.1	6.4	31.6	6.4	0.733
Digits forward	6.4	1.4	7.1	1.4	0.018
Digits backward	4.3	1.2	4.5	1.4	0.437
Long-term memory score					
Information	12.5	5.0	13.8	4.9	0.191
Picture completion	12.7	4.0	13.0	2.9	0.670
Similarities	16.1	5.4	17.6	4.6	0.146
POMS* score	70.5	44.4	28.5	29.7	0.0001
Tension	18.8	7.4	11.2	5.8	0.0001
Depression	18.6	15.7	9.9	9.6	0.0001
Anger	15.3	10.2	9.2	7.4	0.0009
Vigor	10.6	6.6	17.4	5.7	0.0001
Extreme fatigue	16.1	7.3	8.3	5.3	0.0001
Confusion	12.2	5.4	7.3	4.4	0.0001

POMS: profile of mood states

Table A6.12.2/05-2: Symptom-frequency means and standard deviations for exposed and referent groups, compared by analysis of variance

Symptom	Exposed (n = 45)		Referents (n = 56)		p value
	Mean	SD	Mean	SD	
Skin itch	5.9	3.4	3.3	2.7	0.0001
Deformed nails	2.9	3.1	1.4	1.4	0.0026
Chest tightness	5.1	3.3	2.1	1.8	0.0001
Palpitations	4.8	3.2	1.9	1.6	0.0001
Burning chest	4.9	3.3	1.7	1.7	0.0001
Shortness of breath	6.4	3.6	2.5	2.0	0.0001
Dry cough	4.6	2.6	2.8	2.1	0.0004
Cough with mucus	5.8	3.1	3.1	2.4	0.0001
Cough with blood	2.4	2.5	1.1	0.3	0.0001
Dry mouth	5.6	2.7	2.5	1.9	0.0001
Throat irritation	5.0	2.5	2.6	1.6	0.0001
Eye irritation	4.9	3.4	2.3	1.7	0.0001
Decreased sense of smell	4.6	4.0	2.2	2.4	0.0003
Headache	8.2	2.6	4.5	2.5	0.0001
Dizziness	5.7	3.2	2.4	2.1	0.0001
Lightheadedness	5.2	2.9	2.3	1.9	0.0001
Unusual exhilaration	1.8	2.0	1.5	1.5	0.0001
Abnormal balance	4.8	3.3	2.0	1.8	0.0001
Loss of concentration	1.5	1.3	1.2	0.7	0.09
Extreme fatigue	7.8	3.7	3.5	2.6	0.0001
Somnolence	5.6	3.7	1.8	1.6	0.0001
Insomnia	4.6	3.8	2.6	2.2	0.0018
Wake frequently	5.3	3.8	2.6	2.5	0.0001
Sleep only few hours	4.8	3.9	2.8	2.6	0.003
Irritability	7.2	3.3	3.8	2.5	0.0001
Impaired concentration	6.4	3.4	3.1	2.3	0.0001
Recent memory loss	6.4	3.6	2.6	2.3	0.0001
Long-term memory loss	5.0	3.5	2.0	2.0	0.0001
Mood swing	5.4	3.9	2.4	2.0	0.0001
Decreased libido	4.2	3.1	2.3	2.4	0.0011
Decreased alcohol tolerance	3.5	3.0	3.1	2.3	0.424
Indigestion	6.2	3.8	2.6	1.7	0.0001
Loss of appetite	4.0	2.7	2.3	1.9	0.0005
Swollen stomach	5.1	3.2	2.6	1.9	0.0001

Table A6.12.2/05-3: Pulmonary function measurements adjusted for gender, age, height, and cigarette smoking for exposed and referent

Test	Exposed		Referent		p value
	Mean	SD	Mean	SD	
FVC	70.1	12.9	78.7	14.3	0.066
FEV_1	61.2	11.4	71.6	15.9	0.036
FEF_{25-75}	64.0	23.9	47.6	11.2	0.02
FEF_{75-85}	44.9	17.8	60.0	31.3	0.101

FVC: forced vital capacity; FEV_1: 1-second forced expiratory volume; FEF_{25-75}: forced expiratory midflow rate at 25 to 75% of vital capacity; FEF_{75-85}: forced expiratory midflow rate at 75 to 85% of vital capacity

Doc. IIIA/ Section A6.12.2/06

BPD Data set IIA/ Annex Point VI.6.12.2

Direct observation, e.g. clinical cases, poisoning incidents if available

Official use only

1 REFERENCE

1.1 Reference

Gorguner M., Aslan S., Inandu T. and Cakir Z. (2004)

Reactive Airways Dysfunction Syndrome in Housewives Due to a Bleach-Hydrochloric Acid Mixture

Inhalation Toxicology **16**: 87-91

Published

2 GUIDELINES AND QUALITY ASSURANCE (NOT APPLICABLE)

3 MATERIALS AND METHODS

The paper describes a large series of cases of reactive airways dysfunction syndrome (RADS) (sudden onset of asthma-like symptoms and persistence of airway reactivity, following an acute exposure to an irritant gas or vapour) due to the use of a mixture of sodium hypochlorite (bleach, 40%) and hydrochloric acid (18%) commonly used as a household cleaning solution in rural regions of Turkey.

Data were collected retrospectively on 55 symptomatic patients presenting at the emergency department after inhalation exposure of the above-mentioned mixture and included symptoms, past medical and smoking history, details of the exposure, initial peak expiratory flow rate (PEFR) and oxygenation, and acute reversibility of airways obstruction.

RADS was diagnosed according to the American College of Chest Physician criteria: 1) a documented absence of preceding respiratory complaints; 2) onset of symptoms after a single exposure incident; 3) exposure to very high concentrations of a mixture of sodium hypochlorite and hydrochloric acid; 4) onset of symptoms within 24 hrs after the exposure, with persistence of symptoms for at least 3 months; 5) symptoms simulating asthma with cough, wheeze, and dyspnoea; 6) presence of airflow obstruction and 7) absence of all other pulmonary diseases. Methacholine or histamine challenge testing and histopathologic or bronchoalveolar lavage studies were not performed.

Treatment with parenteral glucocorticoids was routinely started initially, and inhaled glucocorticoids were given in the following days.

Fifty patients were followed over the course of 3 months. "Good" response was defined as a decrease in symptoms on history, and an increase of PEFR of at least 20%. "Poor" response was defined as continued dyspnoea and wheezing, need of oxygen, and an unimproving PEFR.

Statistical procedures were performed with the EpiInfo (version 6.04) statistical software package. Chi-square analysis, Fisher's exact test, and t-test were used for statistical analysis. A p value less than or equal to 0.05 was considered statistically significant.

Doc. IIIA/ Section A6.12.2/06

BPD Data set IIA/ Annex Point VI.6.12.2

Direct observation, e.g. clinical cases, poisoning incidents if available

4 RESULTS

Demographic, clinical, and laboratory results data are summarised in Table A6.12.2/06-1.

All patients were housewives. No patients had evidence of atopy history and there was no peripheral eosinophilia. Most women had been using the bleach-HCl mixture to clean the bathroom or kitchen tiles. 30 patients (55%) were exposed to the fumes immediately after mixing the solutions, but 25 (45%) mixed the solutions and waited for 10-15 min before using it. 44 patients (88%) had been exposed to the solution for less than 3 hrs.

48 patients (87%) improved clinically and functionally from the initial visit to the next. The PEFR increased significantly to 84 ± 16. Seven patients (13%) deteriorated in spite of therapy. ARDS developed in 2 patients, and one died from respiratory failure.

Smoking status was not related to differing responses to treatment.

The responses to therapy according to demographic and exposure variables are summarised in Table A6.12.2/06-2.

5 APPLICANT'S SUMMARY AND CONCLUSION

The paper describes a large series of cases of reactive airways dysfunction syndrome (RADS) (sudden onset of asthma-like symptoms and persistence of airway reactivity, following an acute exposure to an irritant gas or vapour) due to the use of a mixture of sodium hypochlorite (bleach, 40%) and hydrochloric acid (18%) commonly used as a household cleaning solution in rural regions of Turkey.

Chlorine gas is produced when sodium hypochlorite comes in contact with the acid; chloride gas can react immediately with water in the airways to form HCl after it is inhaled. Hydrogen chloride is neutralised in the airways and more HCl is formed. Thus the damage to the mucosa might continue to occur over time.

The degree of toxic damage in the airways of RADS patients depends on a complex mixture of host, agent, and environmental factors. A younger age, higher initial PEFR, higher initial p_aO_2, exposure in the kitchen or bathroom (rooms larger than the toilet), exposure after waiting 10-15 min after mixing the solutions, shorter duration of acute exposure and less long-term use of the mixture were associated with a better response to therapy. Forty-eight out of the 55 patients (87%) improved clinically and functionally from the initial visit to the next while 7 patients (13%) deteriorated in spite of therapy. ARDS developed in 2 patients, and one died from respiratory failure.

The need for public health education and preventive measurements about the hazard from using the mixture of sodium hypochlorite (bleach, 40%) and hydrochloric acid (18%) is clear.

Doc. IIIA/ Section A6.12.2/06

Direct observation, e.g. clinical cases, poisoning incidents if available

BPD Data set IIA/ Annex Point VI.6.12.2

	Evaluation by Competent Authorities
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	*Give date of action*
Materials and Methods	Analysis of a large series of cases of reactive airways dysfunction syndrome (RADS) (sudden onset of asthma-like symptoms and persistence of airway reactivity, following an acute exposure to an irritant gas or vapour) due to the use of a mixture of sodium hypochlorite (bleach, 40%) and hydrochloric acid (18%) commonly used as a household cleaning solution in rural regions of Turkey.
Results and discussion	*Adopt applicant's version.*
Conclusion	The need for public health education and preventive measurements about the hazard from using the mixture of sodium hypochlorite (bleach, 40%) and hydrochloric acid (18%) is clear.
Remarks	-
	COMMENTS FROM ...
Date	*Give date of comments submitted*
Materials and Methods	*Discuss additional relevant discrepancies referring to the (sub)heading numbers and to applicant's summary and conclusion.* *Discuss if deviating from view of rapporteur member state*
Results and discussion	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

Table A6.12.2/06-1: Demographic, clinical, and laboratory results in 55 patients with RADS due to bleach-HCl mixture

Parameter	Number of cases	%
Smoking habits		
Smoker	8	14.5
Ex-smoker	4	7.3
Non-smoker	43	78.2
Respiratory symptoms		
Dyspnoea	51	92.7
Cough	49	89.1
Wheezing	40	72.7
Chest tightness	38	69.1
Non-respiratory symptoms		
Headache	36	65.5
Nose-throat irritation	30	54.5
Eye irritation	20	36.4
Abnormal chest x-ray	3	5.5
Reversibility of airways obstruction[a]	21	38.2
	Mean ± SD	
Age (year)	33 ± 11.3	
Initial PERF (% predicted)	72 ± 12	
Initial p_aO_2 (mm Hg)	65 ± 13	

[a]: at least 15% increase in PEFR after two β_2-agonist inhalation treatments

Table A6.12.2/06-2: Response to therapy according to age, smoking status, and exposure characteristics

Parameter	Response to therapy (mean ± SD)			Statistics
	Poor	Good	Overall	
Age	41 ± 14	31 ± 9	33 ± 11	T = 2.9, p = 0.004*
Initial PEFR (% predicted)	64 ± 11	76 ± 13	72 ± 12	T = 2.6, p = 0.01*
Initial p_aO_2 (mm Hg)	60 ± 13	66 ± 12	65 ± 13	T = 1.7, p = 0.09*
Smoking habits [n (%)]				
Smoker	4 (50.0)	4 (50.0)	8 (14.5)	χ^2 = 2.4, p = 0.2
Ex-smoker	1 (25.0)	3 (75.0)	4 (7.3)	
Non-smoker	10 (23.3)	33 (76.7)	43 (78.2)	
Exposure location [n (%)]				
Toilet room	8 (40.0)	12 (60.0)	20 (36.4)	χ^2 = 4.4, p = 0.02
Bathroom/kitchen	5 (14.3)	30 (85.7)	35 (63.6)	
Timing of exposure [n (%)]				
Immediate	12 (40.0)	18 (60.0)	30 (54.5)	χ^2 = 9.7, p = 0.003
After 10-15 min	1 (4.0)	24 (96.0)	25 (45.5)	
Short-term exposure [n (%)]				
< 1 h	3 (14.0)	19 (86.4)	22 (40.0)	
1-3 hrs	5 (22.7)	17 (77.3)	22 (40.0)	χ^2 = 4.1, p = 0.12
> 3 hrs	5 (45.5)	6 (54.5)	11 (20.0)	p = 0.05
Long-term exposure [n (%)]				
< 12 months	1 (4.2)	23 (95.8)	24 (43.6)	
12-24 months	5 (26.3)	14 (73.7)	19 (34.5)	χ^2 = 13.1, p = 0.001
> 24 months	7 (58.3)	5 (41.7)	12 (21.9)	p = 0.000

*: A t-test for paired samples was used for age, initial PEFR and p_aO_2 (also represent a comparison of poor vs. good responses). The remaining data set were analysed using the chi-square test and Fisher's exact test.

Doc. IIIA/ Section A6.12.3

BPD Data set IIA/ Annex Point VI.6.12.3

Health records, both from industry and any other available sources

Official use only

1 REFERENCE

1.1 Reference

Stevens B., Koenig J.Q., Rebolledo V., Hanley Q.S. and Covert D.S. (1992)

Respiratory Effects from the Inhalation of Hydrogen Chloride in Young Adult Asthmatics

JOM **34** (9): 923-929

Published

2 GUIDELINES AND QUALITY ASSURANCE (NOT APPLICABLE)

3 MATERIALS AND METHODS

Five male and five female 18 to 25-year old mild asthmatic subjects were exposed to filtered air, 0.8 ppm and 1.8 ppm HCl while wearing half-face masks, during three separate 45-min experimental sessions involving 15 min exercise (treadmill walking), 15 min rest, followed again by exercise. Baseline and post-exposure pulmonary function measurements were taken including forced expiratory volume in 1 second (FEV_1), forced vital capacity (FVC), maximal flow at 50% of expired vital capacity (V_{max50}), maximal flow at 75% of expired vital capacity (V_{max75}), and total respiratory resistance as well as peak flow. Nasal breathing and oral ammonia levels were also measured pre-exposure and post-exposure.

4 RESULTS

No significant pulmonary effects were found at these HCl concentrations and exposure durations. Nasal power showed no significant differences between test atmospheres; however, in isolation a significant decrease ($p<0.01$) was found in measurements of inspiration with exposure to 0.8 ppm. Ammonia levels showed a significant rise post-exposure after both concentrations of HCl (paired t test, $p<0.01$), not seen after air exposure.

The asthmatic subjects showed no adverse respiratory health effects of inhalation of low concentrations of HCl.

5 APPLICANT'S SUMMARY AND CONCLUSION

Exposure of five male and five female young adult asthmatic subjects to filtered air, 0.8 ppm or 1.8 ppm HCl for 45 minutes did not reveal any adverse respiratory health effects.

Doc. IIIA/ Section A6.12.3

Health records, both from industry and any other available sources

BPD Data set IIA/ Annex Point VI.6.12.3

	Evaluation by Competent Authorities
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	*01.0.2009.*
Materials and Methods	FIVE MALE AND FIVE FEMALE 18 TO 25-YEAR OLD MILD ASTHMATIC SUBJECTS WERE EXPOSED TO FILTERED AIR, 0.8 PPM AND 1.8 PPM HCL WHILE WEARING HALF-FACE MASKS, DURING THREE SEPARATE 45-MIN EXPERIMENTAL SESSIONS INVOLVING 15 MIN EXERCISE , 15 MIN REST, FOLLOWED AGAIN BY EXERCISE.
Results and discussion	*Adopt applicant's version.*
Conclusion	Exposure of five male and five female young adult asthmatic subjects to filtered air, 0.8 ppm or 1.8 ppm HCl for 45 minutes did not reveal any adverse respiratory health effects.
Remarks	-
	COMMENTS FROM ...
Date	*Give date of comments submitted*
Materials and Methods	*Discuss additional relevant discrepancies referring to the (sub)heading numbers and to applicant's summary and conclusion.* *Discuss if deviating from view of rapporteur member state*
Results and discussion	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

Doc. IIIA/ Section A6.12.4

BPD Data set IIA/ Annex Point VI.6.12.2

Epidemiological studies on the general population, if available

Official use only

1 REFERENCE

1.1 Reference

International Agency for Research on Cancer (IARC) (1992)

Occupational exposures to mists and vapours from strong inorganic acids and other industrial chemicals

IARC monographs on the evaluation of carcinogenic risks to humans, Vol. 54

Published

2 GUIDELINES AND QUALITY ASSURANCE (NOT APPLICABLE)

3 MATERIALS AND METHODS

A review of available epidemiologic studies on hydrogen chloride was conducted by a working group of experts in carcinogenicity and related fields, within the context of the program on the evaluation of carcinogenic risks to humans.

The experts reviewed the following studies:

1. A follow-up study of workers with potential exposure to acrylamide in four US chemical plants (Collins *et al.* 1989). The Working Group noted that the expected numbers were not reported.

2. A study on 1165 male workers employed in 1940-64 in three US steel-pickling operations for at least six months (Beaumont *et al.* 1987), a subset if 189 workers had been exposed to mists of acids other than sulphuric, which were primarily of hydrochloric acid.

3. A study by Steenland *et al.* (1988) of the same cohort. The Working Group noted that confounding by exposure to sulfuric acid could not be ruled out.

4. A case-control study of primary intracranial neoplasms conducted at a US chemical plant (Bond *et al.* 1983)

5. A case-control study of renal cancer (Bond *et al.* 1985)

6. A case-control study of lung cancer, nested in a cohort of 19608 men employed at a Dow chemical plant (Bond *et al.* 1986 and 1991). The Working Group noted that the methods used may not have been optimal.

7. A population-base case-control study of Siemiatycki (1991)

4 RESULTS

1. Collins *et al.* (1989) reported an excess of lung cancer at one of the facilities studies. The excess was due partly to an increased number of lung cancer deaths (11) observed among men who had worked in a muriatic acid (hydrochloric acid) department. The Working Group noted that the expected numbers were not reported.

2. An excess risk for lung cancer was seen (standardized mortality ratio (SMR) 2.24; 95% confidence interval (CI) 1.02-4.25; 9 deaths). The excess persisted for workers who had been employed in 1950-54 when other steelworkers were used as a control for socioeconomic and life-style factors such as smoking (SMR 2.00; 95% CI 1.06-3.78).

3. An excess of incident cases of laryngeal cancer was observed in steel picklers (relative risk 2.6; 95% CI 1.2-5.0; 9 cases). Two of the cases

had been exposed only to acids other than sulphuric, and three had been exposed to a mixture of acids. The Working Group noted that confounding by exposure to sulfuric acid could not be ruled out.

4. No association with any exposure to hydrogen chloride was found (odds ratio 1.40; 90% CI 0.70-2.80 using the first control group; odds ratio 1.02; 90% CI 0.81-1.29 using the second control group). The odds ratio for exposure to hydrogen chloride for people who had been employed for 1-4 years was 2.02 (90% CI 0.5-0.81); no association was seen for individuals who had been employed for > 20 years.

5. The odds ratios for exposure to hydrogen chloride were 0.90 (90% CI 0.44-1.83) in comparison with the first control group and 0.86 (90% CI 0.40-1.86) in comparison with the second (12 cases).

6. The risk associated with exposure to hydrogen chloride was 1.02 (95% CI 0.77-1.35; 129 cases); the risk was essentially the same when exposures that had occurred within 15 years of the date of death of the cases were ignored (0.92; 95% CI 0.68-1.24; 108 cases).

The work history of the 308 cases of lung cancer and 616 controls in this study were augmented with 8-h time-weighted average exposures to hydrogen chloride (Bond *et al.*1991, see A6.12.1_01), and several exposure measurements were developed. Calculation of Mantel-Haenszel adjusted relative risks revealed no association between any of the measures of exposure used and lung cancer. The Working Group noted that the methods used may not have been optimal.

6. No association was found between all cancers of the lung and exposure to hydrogen chloride (7% life-time prevalence of exposure for the population). The odds ratio for oat-cell carcinoma of the lung in exposed workers was 1.6 (19 cases; 90% CI 1.0-4.5). In an analysis restricted to the French-Canadian subset of the study population and population controls, the odds ratio for non-Hodgkin's lymphoma was 1.6 (90% CI 1.0-2.5; 18 cases), and that for rectal cancer was 1.9 (90% CI 1.1-3.4; 18 cases).

5 APPLICANT'S SUMMARY AND CONCLUSION

The review of available epidemiologic studies on hydrogen chloride conducted by a working group of experts in carcinogenicity and related fields, within the context of the program on the evaluation of carcinogenic risks to humans, lead to the conclusion that the epidemiologic studies provide inadequate evidence for the carcinogenicity of hydrogen chloride to humans. One study of steel-pickling workers showed an excess risk for cancer of the lung in workers exposed primarily to hydrochloric acid. An increased risk for laryngeal cancer was observed in the same cohort; however, no analysis was performed of workers exposed to hydrochloric acid. None of three US industry-based case-control studies suggested an association between exposure to hydrogen chloride and cancers of the lungs, brain or kidney. In one Canadian population-based case-control study, an increased risk for oat-cell carcinoma was suggested in workers exposed to hydrochloric acid; however, no excess risk was observed for other histological types of lung cancer.

Inadequate evidence was also obtained in experimental animals.

Hydrochloric acid is therefore considered to be unclassifiable as to its carcinogenicity to humans (group 3).

Doc. IIIA/ Section A6.12.4

Epidemiological studies on the general population, if available

BPD Data set IIA/ Annex Point VI.6.12.2

	Evaluation by Competent Authorities
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	*01.06.2009.*
Materials and Methods	A review of 6 available epidemiologic studies on hydrogen chloride – case reports, epidemiological studies, case-control study.
Results and discussion	*Adopt applicant's version.*
Conclusion	*Hydrochloric acid is considered to be unclassifiable as to its carcinogenicity to humans (group 3).*
Remarks	*No data about exposure levels.*
	COMMENTS FROM ...
Date	*Give date of comments submitted*
Materials and Methods	*Discuss additional relevant discrepancies referring to the (sub)heading numbers and to applicant's summary and conclusion.* *Discuss if deviating from view of rapporteur member state*
Results and discussion	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

Table A6.12.4-1: Summary of HCl Exposure Monitoring Data, Freeport, Texas

Production plant/year	Area measurements (ppm)		Percent of samples >5 ppm			
	Average	Range	Area 1*	Area 2	Area 3	Area 4
South Operations						
1974	6.9	4.5-9.2	9.3	37.2	64.7	16.4
1975	3.5	1.8-4.8	1.3	27.0	45.9	18.9
1976	2.7	1.7-3.9	1.8	14.3	25.0	7.1
1983	NC	NC	5.1	5.2	16.8	6.5
North Operations						
1974	4.6	2.6-8.7	8.8	26.2	38.7	3.8
1975	3.0	1.4-6.6	3.4	17.2	28.7	6.8
1976	2.2	1.2-3.6	4.3	13.0	20.3	14.5
Miscellaneous						
Cell Feed South (1978/1979)	0.5	ND-3.3	NA	NA	NA	NA
Cell Feed North (1979)	0.3	ND-15	NA	NA	NA	NA
Casting South (1980)	3.0	1.3-6.7	NA	NA	NA	NA

*Respiratory protection not likely worn in Area 1 but most likely used in Areas 2, 3 and 4: NC: not calculable; ND: not detectable; NA: not applicable

Doc. IIIA/ Section A6.12.5 BPD Dataset IIA/ Annex Point VI.6.12.5	Diagnosis of poisoning including specific signs of poisoning and clinical tests, if available	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	**Official use only**
Other existing data [✓] **Limited exposure [ ]**	**Technically not feasible [ ]** **Scientifically unjustified [✓]** **Other justification [ ]**	
Detailed justification:	Several poisoning cases have been identified, especially in suicide attempts. Intake of concentrate hydrochloric aqueous solutions (24-32%) produces a rapid, progressive necrosis of the digestive tract, the extent and severity depending fundamentally on the quantity of the acid ingested, time in contact with the viscera and the presence of food or protective substances in the gastric cavity. Quite a low dose as half a glass (80-100 mL) is often lethal, because of the massive necrosis of the gastro-intestinal tract, often accompanied by perforation and signs of peritoneal irritation. Lesions of the otopharyngeal tract are generally evident (oedema, erythema, pillar, pharynx and uvula ulcers), a characteristics smell can be noted, and metabolic acidosis with pH values between 7.2 and 6.9 occurs. Subjects may go into shock. Lower dosages (20-40 mL) are less likely to be lethal. The main clinical signs are odynophagia, epigastric pain without signs of peritoneal irritation, lack of systemic symptoms, low lesions of the oropharyngeal tract (flushing and oedema without ulcerations), and pH within normal range. Endoscopic exploration helps to confirm the diagnosis and evaluate the degree of damage however, in case of massive swallowing, endoscopy could take too long and immediate laparatomy can be established on the basis of clinical criteria.	
Undertaking of intended data submission [ ]	Not applicable	

Doc. IIIA/ Section A6.12.5 **BPD Dataset IIA/ Annex Point VI.6.12.5**	**Diagnosis of poisoning including specific signs of poisoning and clinical tests, if available**
	Evaluation by Competent Authorities
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	*01.06.2009.*
Evaluation of applicant's justification	Detailed description of poisoning process showed that intake of concentrate hydrochloric acid (24-32%) 80-100 mL is often lethal; lesions of the otopharyngeal tract (oedema, erythema, pillar, pharynx and uvula ulcers) were observed, a characteristics smell can be noted, and metabolic acidosis with pH values between 7.2 and 6.9 occurs. Subjects may go into shock. Lower dosages (20-40 mL) are less likely to be lethal.
Conclusion	Applicant's justification is acceptable.
Remarks	Data is given for acute poisoning.
	COMMENTS FROM OTHER MEMBER STATE *(specify)*
Date	*Give date of comments submitted*
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

Doc. IIIA/ Section A6.12.6 BPD Dataset IIA/ Annex Point VI.6.12.6	Sensitisation/allergenicity observations, if available	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	**Official use only**
Other existing data [✓]	**Technically not feasible** [ ] **Scientifically unjustified** [✓]	
Limited exposure [ ]	**Other justification** [ ]	
Detailed justification:	Animal data do not indicate any sensitisation potential for hydrochloric acid, and no cases have been identified in literature. Actually, in contact with water hydrochloric acid dissociates completely to give eventually hydronium and chloride ions, both normal constituents in the body of all mammalian species, and all mammalian species experience every day the production and secretion of hydrochloric acid into their stomach. Instead, hydrochloric acid has been related to cases of reactive airways dysfunction syndrome (RADS), a sudden onset of asthma-like symptoms and persistence of airway reactivity, following an acute exposure to an irritant gas or vapour, due to the use of a mixture of sodium hypochlorite (bleach, 40%) and hydrochloric acid (18%) commonly used especially in underdeveloped countries as a household cleaning solution. According to the American College of Chest Physician criteria, RADS can be diagnosed in cases on the basis of 1) a documented absence of preceding respiratory complains; 2) onset of symptoms after a single exposure incident; 3) exposure to very high concentrations of a mixture of sodium hypochlorite and hydrochloric acid; 4) onset of symptoms within 24 hrs after the exposure, with persistence of symptoms for at least 3 months; 5) symptoms simulating asthma with cough, wheeze, and dyspnoea; 6) presence of airflow obstruction and 7) absence of all other pulmonary diseases. The degree of toxic damage in the airways of RADS patients depends on a complex mixture of host, agent, and environmental factors, but atopy or smoking habits seem not to correlate to incidence of the syndrome. Besides, no peripheral eosinophilia is usually observed. Chlorine gas is produced when sodium hypochlorite comes in contact with the acid; chloride gas can react immediately with water in the airways to form HCl again after it is inhaled. Hydrogen chloride is neutralised in the airways and more HCl is formed thus the damage to mucosa might continue to occur over time. Although symptoms can mimic an allergic reaction, RADS is actually linked to the well known irritant properties of hydrochloric acid and it is considered that no sensitisation or allegenicity potential can be expected from exposure to hydrochloric acid.	
Undertaking of intended data submission [ ]	Not applicable	

Doc. IIIA/ Section A6.12.6 **BPD Dataset IIA/ Annex Point VI.6.12.6**	**Sensitisation/allergenicity observations, if available**
	Evaluation by Competent Authorities
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	*01.06.2009.*
Evaluation of applicant's justification	Chlorine gas is produced when sodium hypochlorite comes in contact with the acid; chloride gas can react immediately with water in the airways to form HCl again after it is inhaled. Hydrogen chloride is neutralised in the airways and more HCl is formed thus the damage to mucosa might continue to occur over time. The acute exposure to an irritant gas or vapour of hydrochloric acid induce reactive airways dysfunction syndrome (RADS). RADS is actually linked to the well known irritant properties of hydrochloric acid and it is considered that no sensitisation or allegenicity potential can be expected from exposure to hydrochloric acid.
Conclusion	Exposure to hydrochloric acid does not induce sensitisation or allegenicity. Animal data do not indicate any sensitisation potential for hydrochloric acid, and no cases have been identified in literature.
Remarks	-
	COMMENTS FROM OTHER MEMBER STATE *(specify)*
Date	*Give date of comments submitted*
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

Doc. IIIA/ Section A6.12.7 **BPD Dataset IIA/ Annex Point VI.6.12.7**	**Specific treatment in case of an accident or poisoning: first aid measures, antidotes and medical treatment**	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	**Official use only**
Other existing data [✓] **Limited exposure [ ]**	**Technically not feasible [ ]** **Scientifically unjustified [✓]** **Other justification [ ]**	
Detailed justification:	Several poisoning cases have been identified, especially in suicide attempts. Intake of concentrate hydrochloric aqueous solutions (24-32%) produces a rapid, progressive necrosis of the digestive tract, the extent and severity depending fundamentally on the quantity of the acid ingested, time in contact with the viscera and the presence of food or absorbing substances in the gastric cavity. Quite a low dose as half a glass (80-100 mL) is often lethal, because of the massive necrosis of the gastro-intestinal tract, often accompanied by perforation and signs of peritoneal irritation. Lesions of the oropharyngeal tract is generally evident (oedema, erythema, pillar, pharynx and uvula ulcers), a characteristics smell can be noted, and metabolic acidosis with pH values between 7.2 and 6.9 occurs. According to Muñoz Muñoz E. *et al.* (1998) necrosis of the duodenum-pancreatic frame is the main negative occurrence leading to lethality. They suggest that on the basis of clinical criteria immediate laparatomy without any previous endoscopy investigation can be established, and the operation should aim to prevent necrosis of the duodenum-pancreatic frame. Acid should be diluted, using water or milk. Gastric lavage should be avoided, to prevent further damage to the oesophagus. Lower dosages (20-40 mL) are generally not lethal. The main clinical signs are odynophagia, epigastric pain without signs of peritoneal irritation, lack of systemic symptoms, low lesions of the oropharyngeal tract (flushing and oedema without ulcerations), and pH within normal range. Total parenteral nutrition, anti-H2, antibiotics, and added corticoids in case of large extent of oesophagus damage can generally effectively treat these lighter cases. **References** Muñoz Muñoz E., Bretcha Boix P., Collera Ormazabal P., Rodriguez Santiago J., Gonzalez Pons G., Veloso Veloso E. and Marco Molina C. (1998) Swallowing of hydrochloric acid:study of 25 cases. Rev. Esp. Enferm. Dig. **90**(10): 701-704	
Undertaking of intended data submission [ ]	Not applicable	

Doc. IIIA/ Section A6.12.7 **BPD Dataset IIA/ Annex Point VI.6.12.7**	**Specific treatment in case of an accident or poisoning: first aid measures, antidotes and medical treatment**
	Evaluation by Competent Authorities
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	*01.06.2009.*
Evaluation of applicant's justification	*Agree with applicant's version.*
Conclusion	*Applicant's justification is acceptable.*
Remarks	*No first aid measures in the event eye contamination, therapeutic regimes.*
	COMMENTS FROM OTHER MEMBER STATE *(specify)*
Date	*Give date of comments submitted*
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

Doc. IIIA/ Section A6.12.8 **BPD Dataset IIA/ Annex Point VI.6.12.8**	**Prognosis following poisoning**	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	**Official use only**
Other existing data [✓]	**Technically not feasible** [ ] **Scientifically unjustified** [✓]	
Limited exposure [ ]	**Other justification** [ ]	
Detailed justification:	Several poisoning cases have been identified, especially in suicide attempts. Intake of concentrate hydrochloric aqueous solutions (24-32%) produces a rapid, progressive necrosis of the digestive tract, the extent and severity depending fundamentally on the quantity of the acid ingested, time in contact with the viscera and the presence of food or absorbing substances in the gastric cavity. Quite a low dose as half a glass (80-100 mL) is often lethal, because of the massive necrosis of the gastro-intestinal tract, often accompanied by perforation and signs of peritoneal irritation. Lesions of the otopharyngeal tract is generally evident (oedema, erythema, pillar, pharynx and uvula ulcers), a characteristics smell can be noted, and metabolic acidosis with pH values between 7.2 and 6.9 occurs. According to Muñoz Muñoz E. *et al.* (1998) necrosis of the duodenum-pancreatic frame is the main negative occurrence leading to lethality. They suggest that on the basis of clinical criteria immediate laparatomy without any previous endoscopy investigation can be established, and the operation should aim to prevent necrosis of the duodenum-pancreatic frame. Acid should be diluted, using water or milk. Gastric lavage should be avoided, to prevent further damage to the oesophagus. Lower dosages (20-40 mL) are generally not lethal. The main clinical signs are odynophagia, epigastric pain without signs of peritoneal irritation, lack of systemic symptoms, low lesions of the oropharyngeal tract (flushing and oedema without ulcerations), and pH within normal range. Total parenteral nutrition, anti-H2, antibiotics, and added corticoids in case of large extent of oesophagus damage can generally effectively treat these lighter cases. **References** Muñoz Muñoz E., Bretcha Boix P., Collera Ormazabal P., Rodriguez Santiago J., Gonzalez Pons G., Veloso Veloso E. and Marco Molina C. (1998) Swallowing of hydrochloric acid:study of 25 cases. Rev. Esp. Enferm. Dig. **90**(10): 701-704	
Undertaking of intended data submission [ ]	Not applicable	

Doc. IIIA/ Section A6.12.8 **BPD Dataset IIA/ Annex Point VI.6.12.8**	**Prognosis following poisoning**
	Evaluation by Competent Authorities
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	*01.06.2009.*
Evaluation of applicant's justification	Several poisoning cases have been identified, especially in suicide attempts. Intake of concentrate hydrochloric aqueous solutions (24-32%) 80-100 mL produces a rapid, progressive necrosis of the digestive tract. Necrosis of the duodenum-pancreatic frame is the main negative occurrence leading to lethality. Lower dosages (20-40 mL) are generally not lethal.
Conclusion	Applicant's justification is acceptable.
Remarks	The expected effects and duration no described.
	COMMENTS FROM OTHER MEMBER STATE *(specify)*
Date	*Give date of comments submitted*
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

Doc. IIIA/ Section 6.13 **BPD Data set IIIA/** **Annex Point IIIA 6.13**	**Toxic effects on livestock and pets**	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	**Official use only**
Other existing data [✓] **Limited exposure [ ]**	**Technically not feasible [ ]** **Scientifically unjustified [✓]** **Other justification [ ]**	
Detailed justification:	No specific data exist on toxicity to livestock or pets. Toxic effects of hydrochloric acid on livestock or domestic pets may be adequately assessed from existing data in rodents, and is consistent with human experience. Any toxicity is anticipated to be limited to site-of-contact effects. Since exposure to livestock or domestic pets is anticipated to be negligible under the proposed conditions of manufacture or use, this data requirement is fulfilled.	
Undertaking of intended data submission [ ]	Not applicable	
	Evaluation by Competent Authorities	
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted	
	EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	*1.06.2009.*	
Evaluation of applicant's justification	*Agree with applicant's version*	
Conclusion	*Agree with applicant's version*	
Remarks	-	
	COMMENTS FROM OTHER MEMBER STATE *(specify)*	
Date	*Give date of comments submitted*	
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*	
Conclusion	*Discuss if deviating from view of rapporteur member state*	
Remarks		

Doc IIIA/ Section A6.14 **BPD Data Set IIA/ Annex Point VI.6.14**	**Other test(s) related to the exposure of humans**	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	**Official use only**
Other existing data [ ] **Limited exposure [ ]**	**Technically not feasible [ ]** **Scientifically unjustified [✓]** **Other justification [ ]**	
Detailed justification:	In contact with water hydrogen chloride dissociates completely to give eventually hydronium and chloride ions, both normal constituents in the body of all mammalian species, including humans. The data requirement is relevant to: "Toxicity of degradation products, by-products and reaction products related to human exposure. Information is required on the toxic effects of substances generated from an active substance, other than mammalian metabolites, in normal use of biocidal product." Further tests on metabolites or degradation products are not required.	
Undertaking of intended data submission [ ]	Not applicable	
	Evaluation by Competent Authorities	
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted	
	EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	*01.06.2009.*	
Evaluation of applicant's justification	*Agree with applicant's version*	
Conclusion	*Agree with applicant's version*	
Remarks	-	
	COMMENTS FROM OTHER MEMBER STATE *(specify)*	
Date	*Give date of comments submitted*	
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*	
Conclusion	*Discuss if deviating from view of rapporteur member state*	
Remarks		

Doc IIIA/Section A6.15 (includes A6.15.1 – A6.15.6) **BPD Data Set IIIA/ Annex Point VI.4**	**Food and feedingstuffs: Identification of degradation and reaction products and of metabolites, behaviour of the residue of the active substance its degradation products and metabolites, including the kinetics of disappearance, in treated or contaminated foods or feedstuffs.**	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
Other existing data [ ] **Limited exposure [✓]**	**Technically not feasible [ ]** **Scientifically unjustified [✓]** **Other justification [ ]**	
Detailed justification:	Hydrochloric acid is formulated as a ready-to-use product intended to be applied indoors only, in toilets. Hydrochloric acid is not used in a manner that would cause it to come into contact with food or feedstuffs (see Doc IIIA, Section 2.10). Hydrochloric acid is a strong acid that is very soluble in water and dissociates completely (Cl^- is a very weak conjugate base, therefore the reaction goes to completion), to form chloride ion and hydronium ions. $HCl + H_2O \rightarrow H_3O^+ + Cl^-$ Therefore, the need to conduct studies to identify degradation products and metabolites in treated or contaminated foods or feedstuffs is not required.	
Undertaking of intended data submission [ ]	Not applicable	
	Evaluation by Competent Authorities	
	EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	*01.06.2009.*	
Evaluation of applicant's justification	Agree with applicant's version	
Conclusion	Agree with applicant's version	
Remarks	-	
	COMMENTS FROM OTHER MEMBER STATE *(specify)*	
Date	*Give date of comments submitted*	
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*	
Conclusion	*Discuss if deviating from view of rapporteur member state*	
Remarks		

Doc IIIA/ Section A6.16 **BPD Data Set IIA/ Annex Point VI.6.16**	**Any other test(s) related to the exposure of humans**	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	**Official use only**
Other existing data [ ] **Limited exposure [ ]**	**Technically not feasible [ ]** **Scientifically unjustified [✓]** **Other justification [ ]**	
Detailed justification:	The data requirement is relevant to: "An expert judgment for suitable tests and reasoned case is needed as to decision that such additional studies are required." It is the expert judgment of the notifier that existing data are adequate for decision as to the acceptability of hydrochloric acid for biocidal use as proposed.	
Undertaking of intended data submission [ ]	Not applicable	
	Evaluation by Competent Authorities	
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted	
	EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	*01.06.2009.*	
Evaluation of applicant's justification	*Agree with applicant's version*	
Conclusion	*Agree with applicant's version*	
Remarks	-	
	COMMENTS FROM OTHER MEMBER STATE *(specify)*	
Date	*Give date of comments submitted*	
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*	
Conclusion	*Discuss if deviating from view of rapporteur member state*	
Remarks		

Doc IIIA / Section A6.17 **BPD Data Set IIIA/ Annex Point VI.6**	**If the active substance is to be used in products for action against plants then tests to assess toxic effects of metabolites on treated plants, if any, where different from those identified in animals shall be required**	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
Other existing data [ ] **Limited exposure [ ]**	**Technically not feasible [ ]** **Scientifically unjustified [✓]** **Other justification [ ]**	
Detailed justification:	The product being supported is not intended for action against plants. No further tests to assess toxic effects of plant metabolites are therefore required.	
Undertaking of intended data submission [ ]	Not applicable	
	Evaluation by Competent Authorities	
	EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	*01.06.2009.*	
Evaluation of applicant's justification	Agree with applicant's version	
Conclusion	Agree with applicant's version	
Remarks	-	
	COMMENTS FROM OTHER MEMBER STATE *(specify)*	
Date	*Give date of comments submitted*	
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*	
Conclusion	*Discuss if deviating from view of rapporteur member state*	
Remarks		

Doc. IIIA/ Section A7.1.1.1.1 **BPD Dataset IIA/ Annex Point VII.7.6.2.1**	**Hydrolysis as a function of pH and identification of breakdown products**	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
Other existing data [ ] **Limited exposure [ ]**	**Technically not feasible [ ]** **Scientifically unjustified [✓]** **Other justification [ ]**	
Detailed justification:	Requirements are that tests, conducted according to EC method C.7. or OECD 111, should address the following: • must be examined at least at three pH values • identification of degradation products that account for >10% of active substance at any sampling time. The active substance, hydrochloric acid, is used as an aqueous solution (33-36%). Hydrochloric acid is a strong acid that is very soluble in water and dissociates completely (Cl^- is a very weak conjugate base, therefore the reaction goes to completion), to form chloride ion and hydronium ions [1,2]. $HCl + H_2O \rightarrow H_3O^+ + Cl^-$ As a result of the complete dissociation of HCl in water, the concentration of the resultant hydronium ions is equal to the concentration of the HCl introduced to the solution and for the purpose of calculating the resultant pH the reaction may be written as: $HCl\ (aq) \rightarrow H^+ + Cl^-$ pH is calculated as $-\log_{10}[H^+]$, where the units of hydrogen ion concentration are moles/litre (molarity). As hydrochloric acid dissociates in water, effects are due to hydronium and chloride ion concentrations and the major result of dissolution of HCl in water is the resulting pH. Thus, due to these intrinsic properties, it is scientifically impossible to perform the hydrolysis test in accordance with the test method. In addition, since the behaviour of HCl in water is known, it is also not scientifically necessary to perform a hydrolysis test. **References** [1] Merck Index (1976), pages 628 and 632, 9th edition. [2] WHO (1982); Environmental Health Criteria 21: Chlorine and Hydrogen Chloride p. 34. International Programme on Chemical Safety.	
Undertaking of intended data submission [ ]	-	

Doc. IIIA/ Section A7.1.1.1.1 **BPD Dataset IIA/ Annex Point VII.7.6.2.1**	**Hydrolysis as a function of pH and identification of breakdown products**
	Evaluation by Competent Authorities
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	*10.10.2008.*
Evaluation of applicant's justification	*Applicant's justification is acceptable* *The active substance, hydrochloric acid, is very soluble and completely dissociates into hydrated protons and chloride ions in water. Therefore it is scientifically impossible to perform the hydrolysis test according to methods EC C.7. or OECD 111.*
Conclusion	*Acceptable*
Remarks	-
	COMMENTS FROM OTHER MEMBER STATE *(specify)*
Date	*Give date of comments submitted*
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

Doc. IIIA/ Section A7.1.1.1.2 **BPD Dataset IIA/ Annex Point VII.7.6.2.2**	**Phototransformation in water including identity of the products of transformation**	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
Other existing data [ ] **Limited exposure [ ]**	**Technically not feasible [ ]** **Scientifically unjustified [✓]** **Other justification [ ]**	
Detailed justification:	The requirement is that tests should be conducted according to SETAC procedures (SETAC 1995), US-EPA guideline (OPPTS 835.2210) or OECD guideline No. 7 (OECD 1997) and address the following: • identification of transformation products that account for >10% of active substance at any sampling time. • results submitted should correspond to the light intensities and spectral distribution from northern to southern Europe The active substance, hydrochloric acid, is a strong acid that is very soluble in water and dissociates completely (Cl^- is a very weak conjugate base, therefore the reaction goes to completion), to form chloride ion and hydronium ions [1,2]. $HCl + H_2O \rightarrow H_3O^+ + Cl^-$ As a result of the complete dissociation of HCl in water, the concentration of the resultant hydronium ions is equal to the concentration of the HCl introduced to the solution and for the purpose of calculating the resultant pH the reaction may be written as: $HCl\ (aq) \rightarrow H^+ + Cl^-$ pH is calculated as $-\log_{10}[H^+]$, where the units of hydrogen ion concentration are moles/litre (molarity). As hydrochloric acid dissociates in water, effects are due to hydronium and chloride ion concentrations and the major result of dissolution of HCl in water is the resulting pH. Thus, due to these intrinsic properties, it is scientifically impossible to perform the phototransformation in water test in accordance with the test method. **References** [1]Merck Index (1976), pages 628 and 632, 9th edition [2]WHO (1982); Environmental Health Criteria 21: Chlorine and Hydrogen Chloride p. 34. International Programme on Chemical Safety.	
Undertaking of intended data submission [ ]	-	

Doc. IIIA/ Section A7.1.1.1.2 BPD Dataset IIA/ Annex Point VII.7.6.2.2	**Phototransformation in water including identity of the products of transformation**
	Evaluation by Competent Authorities
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	*14.11.2008.*
Evaluation of applicant's justification	*Applicant's justification is acceptable* *The active substance, hydrochloric acid, is a strong acid that is very soluble in water and dissociates completely to form chloride ion and hydronium ions. Due to these properties of the hydrochloric acid, it is scientifically impossible to perform the phototransformation test in the water as well as identify the products of transformation in accordance with the test methods (SETAC 1995; US-EPA OPPTS 835.2210; OECD 1997).*
Conclusion	*Acceptable*
Remarks	–
	COMMENTS FROM OTHER MEMBER STATE *(specify)*
Date	*Give date of comments submitted*
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

Doc. IIIA/ Section A7.1.1.2.1 **BPD Dataset IIA/ Annex Point VII.7.6.1.1**	**Ready biodegradability**	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
Other existing data [ ] **Limited exposure [ ]**	**Technically not feasible [ ]** **Scientifically unjustified [✓]** **Other justification [ ]**	
Detailed justification:	The requirement is for a test on ready biodegradability on organic compounds. As the active substance, hydrochloric acid, is an inorganic compound, which is not biologically degradable, the study is scientifically impossible to perform. (Reference: TNsG on data requirements for active substances and biocidal products 2000, page 18).	
Undertaking of intended data submission [ ]	-	
	Evaluation by Competent Authorities	
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted	
	EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	*14.11.08.*	
Evaluation of applicant's justification	*Applicant's justification is acceptable* *The test on ready biodegradability is required on organic compounds according to methods given in Annex IV to EC method C.4. A-F or in Annex II of the corresponding OECD 301 guideline. The active substance, hydrochloric acid, as an inorganic compound is not biologically degradable and as follows study on ready biodegradability is methodologically limited and is not scientifically necessary to perform (TNsG, Ch.1.1.4.).*	
Conclusion	*Agree with applicants conclusion*	
Remarks	*No one standard test method references*	
	COMMENTS FROM OTHER MEMBER STATE *(specify)*	
Date	*Give date of comments submitted*	
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*	
Conclusion	*Discuss if deviating from view of rapporteur member state*	
Remarks		

Doc. IIIA/ Section A7.1.1.2.2 **BPD Dataset IIA/ Annex Point VII.7.6.1.2**	**Inherent biodegradability**	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
Other existing data [ ] **Limited exposure [ ]**	**Technically not feasible [ ]** **Scientifically unjustified [✓]** **Other justification [ ]**	
Detailed justification:	The requirement is for a test on inherent biodegradability, where appropriate, on organic compounds As the active substance, hydrochloric acid, is an inorganic compound, which is not biologically degradable, the study is scientifically impossible to perform. (Reference: TNsG on data requirements for active substances and biocidal products 2000, page 18).	
Undertaking of intended data submission [ ]	-	
	Evaluation by Competent Authorities	
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted	
	EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	*05.12.2008.*	
Evaluation of applicant's justification	*Applicant's justification is acceptable* *The test on inherent biodegradability is required on organic compounds according to methods given in Annex IV to EC C.12. and EC C.9. or corresponding OECD 302 A-B and OECD 302 C. The active substance, hydrochloric acid, as an inorganic compound is not biologically degradable and as follows study on inherent biodegradability is methodologically limited and is not scientifically necessary to perform (TNsG, Ch.1.1.4.).*	
Conclusion	*Acceptable*	
Remarks	*No one standard test method references*	
	COMMENTS FROM OTHER MEMBER STATE *(specify)*	
Date	*Give date of comments submitted*	
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*	
Conclusion	*Discuss if deviating from view of rapporteur member state*	
Remarks		

Doc. IIIA/ Section A7.1.1.2.3 BPD Dataset IIA/ Annex Point XII.2.1	Biodegradation in seawater	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
Other existing data [ ] **Limited exposure** [ ]	**Technically not feasible** [ ] **Scientifically unjustified** [✓] **Other justification** [ ]	
Detailed justification:	The requirement, where appropriate, is for a test on biodegradability of organic compounds. As the active substance, hydrochloric acid, is an inorganic compound, which is not biologically degradable, the study is scientifically impossible to perform. (Reference: TNsG on data requirements for active substances and biocidal products 2000, page 18). In addition, the proposed use of HCl is not expected to lead to significant releases to marine water.	
Undertaking of intended data submission [ ]	-	
	Evaluation by Competent Authorities	
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted	
	EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	*05.12.2008.*	
Evaluation of applicant's justification	*Agree with applicant's justification version* *Based on justification given by the applicant on ready biodegradation (Doc.IIIA/Section A7.1.1.2.2.) and inherent biodegradation (Doc.IIIA/Section A7.1.1.2.2.) as well as the proposed use of hydrochloric acid it is not expected to lead to significant releases to marine water.*	
Conclusion	*Acceptable*	
Remarks	*Requirements on safety producing and practical using of biocide should be complied.*	
	COMMENTS FROM OTHER MEMBER STATE *(specify)*	
Date	*Give date of comments submitted*	
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*	
Conclusion	*Discuss if deviating from view of rapporteur member state*	
Remarks		

Doc. IIIA/ Section A7.1.2 **BPD Dataset IIA/ Annex Point XII.2.1**	**Rate and route of degradation in aquatic systems including identification of metabolites and degradation products** Biological sewage treatment Aerobic biodegradation Anaerobic biodegradation Biodegradation in freshwater Aerobic aquatic degradation study Water/sediment degradation study	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
Other existing data [ ] **Limited exposure [ ]**	**Technically not feasible [ ]** **Scientifically unjustified [✓]** **Other justification [ ]**	
Detailed justification:	The requirements are for suitable simulation tests on organic compounds, where relevant. Simulation tests are tests that provide evidence of biodegradation under some environmentally relevant conditions, e.g. OECD STP, OECD 303A and OECD 308 (aerobic and anaerobic transformation in aquatic sediment systems). The behaviour of HCl in water is known. HCl is a strong acid that is very soluble in water and dissociates completely (Cl^- is a very weak conjugate base, therefore the reaction goes to completion), to form chloride ion and hydronium ions [1,2]. $$HCl + H_2O \rightarrow H_3O^+ + Cl^-$$ As the active substance, hydrochloric acid, is an inorganic compound, which is not biologically degradable, simulation studies are not technically possible to perform. (Reference: TNsG on data requirements for active substances and biocidal products 2000, page 18). **References** [1]Merck Index (1976), pages 628 and 632, 9th edition. [2]WHO (1982); Environmental Health Criteria 21: Chlorine and Hydrogen Chloride p. 34. International Programme on Chemical Safety.	
Undertaking of intended data submission [ ]	-	

Doc. IIIA/ Section A7.1.2 **BPD Dataset IIA/ Annex Point XII.2.1**	**Rate and route of degradation in aquatic systems including identification of metabolites and degradation products** Biological sewage treatment Aerobic biodegradation Anaerobic biodegradation Aerobic aquatic degradation study Water/sediment degradation study
	Evaluation by Competent Authorities
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	*05.12.2008*
Evaluation of applicant's justification	*Acceptable with applicant's justification*
Conclusion	*Acceptable*
Remarks	*Additionally to applicant justification version the information from paragraphs A7.1.1.2.1. and A7.1.1.2.2. above indicate not need to study the tests on rate and route of degradation in aquatic systems including identification of metabolites and degradation products (TNsG Ch.3.doc, 7.1.2.).*
	COMMENTS FROM OTHER MEMBER STATE *(specify)*
Date	*Give date of comments submitted*
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

Doc. IIIA/ Section A7.1.3 **BPD Dataset IIA/ Annex Point VII.7.7**	**Adsorption/desorption screening test**	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
Other existing data [ ] **Limited exposure [ ]**	**Technically not feasible [✓]** **Scientifically unjustified [✓]** **Other justification [ ]**	
Detailed justification:	Requirements are that tests, conducted according to OECD method 106 or OECD 121, should address the following: • adsorption to be studied in 5 different soil types at a single concentration, determination of Kd and Koc (tier 2 OECD 121). • HPLC method is an alternative to estimate the partitioning between aqueous phases and soil/sediment/sludge (though not fully validated for some substances). The basic parameters used in the exposure assessment, including adsorption/desorption coefficients, are only applicable to the non-ionised form of the substance (TGD, Part II). The determination of Koc for the intact molecule is not technically possible to perform, as the required test methods are not applicable to molecules which dissociate. Hydrochloric acid is a strong acid that is very soluble in water and dissociates completely (Cl^- is a very weak conjugate base, therefore the reaction goes to completion), to form chloride ion and hydronium ions[1,2]. $HCl + H_2O \rightarrow H_3O^+ + Cl^-$ The resulting hydronium ion is very acidic (pKa -1.7) and is solvated by water molecules[3,4]. As a result of the complete dissociation of HCl in water, the concentration of the resultant hydronium ions is equal to the concentration of the HCl introduced to the solution and for the purpose of calculating the resultant pH the reaction may be written as: $HCl\ (aq) \rightarrow H^+ + Cl^-$ It should be noted that the use of liquid lavatory disinfectant cleaner as a private area disinfectant (PT2) indicates that the standard sewage treatment plant is considered as the point source[5] and the release to waste water by default is 100%. Therefore hydrochloric acid is not directly released to the terrestrial compartment, under normal conditions of use, although a potential indirect route is application of sewage sludge to agricultural soil. Adsorption/desorption coefficients (Kd, Koc) are generally used in an exposure assessment to determine the extent of partitioning of the non-ionised substance between water and air or solids. OECD screening method 106 is designed to give preliminary information about the potential for soil leaching of the substance and the guideline recommends that the test be conducted on soils of varying ion-exchange capacities, surface areas, pH and redox potential. The buffering capacity of soils and sediments is directly linked with the cation exchange capacity or the capacity of the material to provide	

Doc. IIIA/ Section A7.1.3 **BPD Dataset IIA/ Annex Point VII.7.7**	**Adsorption/desorption screening test**	
	(exchange) acidic (e.g. hydrogen, aluminium) or basic (e.g. calcium, magnesium, potassium, sodium) cations. The cation exchange capacity (CEC) is due mainly to clay and colloid fractions and is in part related to particle size and organic matter content. Particle size determines the available area for coating and different coating materials, such as clay minerals, iron hydroxides and organic material have different cation exchange capacity and surface area. The proportion of the different minerals and organic matter in the coatings determines the cation exchange capacity and the sorption distribution coefficient of the coatings[6]. Ions formed as a result of the dissociation of HCl in water will undergo ion-exchange processes in the soil. In summary, the determination of Koc for the intact molecule is not technically possible to perform. The required test methods are not applicable to molecules which dissociate. Following dissociation in water, resultant ions are expected to undergo ion exchange within the soil. Tests on absorption/desorption in water/sediment systems are therefore considered unnecessary and are impossible to perform. **References** [1]Merck Index (1976), pages 628 and 632, 9th edition. [2] WHO (1982); Environmental Health Criteria 21: Chlorine and Hydrogen Chloride p. 34. International Programme on Chemical Safety. [3]Zavitsas, A.A. (2001). Properties of water solutions of electrolytres and nonelectrolytes. J. Phys. Chem.. B. 105 7805 – 7815 [4]Marx, D. et al. (1999). The nature of the hydrated excess proton in water. Nature. 397 601 – 604. [5]van der Poel, P (2001). RIVM report 601450 008. Supplement to the methodology for risk evaluation of biocides. Emission Scenarios Document for Product Type 2: Private and public health area disinfectants and other biocidal products (sanitary and medical sector). [6]Boguslavsky, S. (2000) Organic Sorption and Cation Exchange Capacity of Glacial Sand, Long Island. MSc Thesis. State University of New York	
Undertaking of intended data submission [ ]	-	

Doc. IIIA/ Section A7.1.3 **BPD Dataset IIA/** **Annex Point VII.7.7**	**Adsorption/desorption screening test**
	Evaluation by Competent Authorities
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	*27.01.2009*
Evaluation of applicant's justification	*Applicant's justification is acceptable*
Conclusion	*Acceptable*
Remarks	*Note: Adsorbtion/desorbtion screening test is also required according to the EC method C.18. (TNsG, Ch.2.doc, 7.1.3.) that is a replicate of the OECD TG 106 for the determination of soil adsorbtion/desorbtion using a Batch Equilibrium Method (2000).*
	COMMENTS FROM OTHER MEMBER STATE *(specify)*
Date	*Give date of comments submitted*
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

Doc. IIIA/ Section A7.1.4 (includes 7.1.4.1) **BPD Dataset IIIA/ Annex Point XII.2.2**	**Further studies on adsorption/desorption in water/sediment systems**	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
Other existing data [ ] **Limited exposure [ ]**	**Technically not feasible [ ]** **Scientifically unjustified [✓]** **Other justification [ ]**	
Detailed justification:	Requirements are for further tests on absorption/desorption in water/sediment systems where the preliminary risk assessment indicates this is necessary. A justification for non-submission of data on preliminary absorption/desorption has been made (see document IIIA 7.1.3) for the following reasons: The determination of Koc for the intact molecule is not technically possible to perform. The required test methods are not applicable to molecules which dissociate. Following dissociation in water, resultant ions are expected to undergo ion exchange within the soil. Further tests on absorption/desorption in water/sediment systems are therefore considered unnecessary and are impossible to perform.	
Undertaking of intended data submission [ ]	-	
	Evaluation by Competent Authorities	
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted	
	EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	*28.01.2009*	
Evaluation of applicant's justification	*Applicant's justification is acceptable*	
Conclusion	*Acceptable*	
Remarks	___	
	COMMENTS FROM OTHER MEMBER STATE *(specify)*	
Date	*Give date of comments submitted*	
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*	
Conclusion	*Discuss if deviating from view of rapporteur member state*	
Remarks		

Doc. IIIA/ Section A7.2.1 **BPD Dataset IIIA/ Annex Point XII.1**	**Aerobic degradation in soil, initial study**	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
Other existing data [ ] **Limited exposure [ ]**	**Technically not feasible [✓]** **Scientifically unjustified [✓]** **Other justification [ ]**	
Detailed justification:	The use of liquid lavatory disinfectant cleaner as a private area disinfectant (PT2) indicates that the standard sewage treatment plant is considered as the point source (van de Poel, 2001)[1] and the release to wastewater by default is 100%. Therefore it is not expected that hydrochloric acid will reach the terrestrial compartment, under normal conditions of use. If HCl *were* applied directly to the soil (which is <u>not</u> the case), the requirements are for suitable simulation tests on organic compounds, where relevant. Simulation tests are tests that provide evidence of biodegradation under some environmentally relevant conditions, e.g. OECD 307 (aerobic and anaerobic transformation in soil). As the active substance, hydrochloric acid, is an inorganic compound, which is not biologically degradable, simulation studies are not technically possible to perform. (Reference: TNsG on data requirements for active substances and biocidal products 2000, page 18). HCl is a strong acid that is very soluble in water and dissociates completely (Cl^- is a very weak conjugate base, therefore the reaction goes to completion), to form chloride ion and hydronium ions [2,3]. $HCl + H_2O \rightarrow H_3O^+ + Cl^-$ Ions formed as a result of the dissociation of HCl in water (the primary environmental compartment for emission) will undergo ion-exchange processes in the soil. In summary, the determination of aerobic degradation of HCl in soil is not technically possible to perform. Following dissociation of HCl in water, resultant ions are expected to undergo ion exchange within the soil. Tests on degradation in soil are therefore considered unnecessary and are impossible to perform. **References** [1]van der Poel, P (2001). RIVM report 601450 008. Supplement to the methodology for risk evaluation of biocides. Emission Scenarios Document for Product Type 2: Private and public health area disinfectants and other biocidal products (sanitary and medical sector). [2]Merck Index (1976), pages 628 and 632, 9th edition. [3]WHO (1982); Environmental Health Criteria 21: Chlorine and Hydrogen Chloride p. 34. International Programme on Chemical Safety.	
Undertaking of intended data submission [ ]	-	

Doc. IIIA/ Section A7.2.1 **BPD Dataset IIIA/ Annex Point XII.1**	**Aerobic degradation in soil, initial study**
	Evaluation by Competent Authorities
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	*13.03.2009*
Evaluation of applicant's justification	*Applicant's justification is acceptable*
Conclusion	*Acceptable*
Remarks	_
	COMMENTS FROM OTHER MEMBER STATE *(specify)*
Date	*Give date of comments submitted*
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

Doc. IIIA/ Section A7.2.2 (includes 7.2.2.1, 7.2.2.2, 7.2.2.3, 7.2.2.4) **BPD Dataset IIIA/ Annex Point XII.1.1**	**Aerobic degradation in soil, further studies:** Rate and route of degradation Field soil dissipation and accumulation Extend and nature of bound residues Other soil degradation studies	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
Other existing data [ ] **Limited exposure [ ]**	**Technically not feasible [✓]** **Scientifically unjustified [✓]** **Other justification [ ]**	
Detailed justification:	The use of liquid lavatory disinfectant cleaner as a private area disinfectant (PT2) indicates that the standard sewage treatment plant is considered as the point source (van de Poel, 2001) and the release to wastewater by default is 100%. Therefore it is not expected that hydrochloric acid will reach the terrestrial compartment, under normal conditions of use. If HCl *were* applied directly to the soil (which is <u>not</u> the case), the requirements are for suitable simulation tests on organic compounds, where relevant. Simulation tests are tests that provide evidence of biodegradation under some environmentally relevant conditions, e.g. OECD 307 (aerobic and anaerobic transformation in soil). As the active substance, hydrochloric acid, is an inorganic compound, which is not biologically degradable, simulation studies are not technically possible to perform. (Reference: TNsG on data requirements for active substances and biocidal products 2000, page 18). HCl is a strong acid that is very soluble in water and dissociates completely (Cl^- is a very weak conjugate base, therefore the reaction goes to completion), to form chloride ion and hydronium ions [1,2]. $HCl + H_2O \rightarrow H_3O^+ + Cl^-$ Ions formed as a result of the dissociation of HCl in water (the primary environmental compartment for emission) will undergo ion-exchange processes in the soil. In summary, the determination of aerobic degradation of HCl in soil is not technically possible to perform. Following dissociation of HCl in water, resultant ions are expected to undergo ion exchange within the soil. Tests on degradation, dissipation and accumulation of HCl in soil are therefore considered unnecessary and are impossible to perform. **References** [1]Merck Index (1976), pages 628 and 632, 9th edition. [2]WHO (1982); Environmental Health Criteria 21: Chlorine and Hydrogen Chloride p. 34. International Programme on Chemical Safety.	
Undertaking of intended data submission [ ]	-	

Doc. IIIA/ Section A7.2.2 (includes 7.2.2.1, 7.2.2.2, 7.2.2.3, 7.2.2.4) **BPD Dataset IIIA/ Annex Point XII.1.1**	**Aerobic degradation in soil, further studies:** Rate and route of degradation Field soil dissipation and accumulation Extend and nature of bound residues Other soil degradation studies
	Evaluation by Competent Authorities
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	*13.03.2009*
Evaluation of applicant's justification	*Applicant's justification is acceptable*
Conclusion	*Acceptable*
Remarks	_
	COMMENTS FROM OTHER MEMBER STATE *(specify)*
Date	*Give date of comments submitted*
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

Doc. IIIA/ Section A7.2.3 (includes 7.2.3.1, 7.2.3.2) **BPD Dataset IIIA/ Annex Point XII.1.2-1.3**	**Adsorption and mobility in soil, further studies**	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
Other existing data [ ] **Limited exposure [ ]**	**Technically not feasible [✓]** **Scientifically unjustified [✓]** **Other justification [ ]**	
Detailed justification:	Requirements are for further tests on absorption and mobility in soil where the preliminary risk assessment indicates this is necessary (and if the substance is used directly on, released to or disposed in soil in relevant amounts), to include a consideration of the behaviour of metabolites and degradation products. The use of liquid lavatory disinfectant cleaner as a private area disinfectant (PT2) indicates that the standard sewage treatment plant is considered as the point source[1] and the release to waste water by default is 100%. Therefore hydrochloric acid is not directly released to the terrestrial compartment, under normal conditions of use. The exposure assessment (Document IIB, Section 3) indicates that any emissions of chloride and hydronium ions as a result of the proposed use of Harpic Limescale Remover are expected to have minimal impact on the terrestrial environment. The terrestrial risk assessment (Document IIC) indicates that the risk to terrestrial organisms from the proposed use is acceptable. A justification for non-submission of data on preliminary absorption/desorption has been made (see Document IIIA, Section 7.1.3) for the following reasons: In summary, adsorption tests for the intact molecule are not technically possible to perform as the test methods are not applicable to molecules which dissociate. Following dissociation in water, resultant ions are expected to undergo ion exchange within the soil. Further tests on absorption and mobility of HCl in soil are therefore considered unnecessary and are impossible to perform. **Reference** [1]van der Poel, P (2001). RIVM report 601450 008. Supplement to the methodology for risk evaluation of biocides. Emission Scenarios Document for Product Type 2: Private and public health area disinfectants and other biocidal products (sanitary and medical sector).	
Undertaking of intended data submission [ ]	-	

Doc. IIIA/ Section A7.2.3 (includes 7.2.3.1, 7.2.3.2) **BPD Dataset IIIA/ Annex Point XII.1.2-1.3**	**Adsorption and mobility in soil, further studies**
	Evaluation by Competent Authorities
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	*13.03.2009*
Evaluation of applicant's justification	*Applicant's justification is acceptable*
Conclusion	*Acceptable*
Remarks	*Note: As the justification for non-submission of data on preliminary absorption/desorption has been made (see Document IIIA, Section 7.1.3) further tests on absorption and mobility of hydrochloric acid in soil are therefore considered unnecessary and are impossible to perform.*
	COMMENTS FROM OTHER MEMBER STATE
Date	*Give date of comments submitted*
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

Doc. IIIA/ Section A7.3.1 BPD Dataset IIIA/ Annex Point VII.5	Phototransformation in air	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
Other existing data [ ] **Limited exposure [ ]**	**Technically not feasible [✓]** **Scientifically unjustified [✓]** **Other justification [ ]**	
Detailed justification:	The requirement is to estimate phototransformation in air by the standard estimation method (Atkinson calculation, e.g. using EPA AOPWIN), which estimates the rate constant for the atmospheric, gas-phase reaction between photochemically produced hydroxyl radicals and organic chemicals and also between ozone and olefinic/acetylenic compounds. However, this method is not suitable for inorganic compounds which contain no nitrogen groups, hydroxide groups, double bonds, triple bonds or aromatic rings. Hydrogen chloride can react with hydroxyl radicals in air to form free chloride radicals according to the following equation: $HCl + OH\bullet \rightarrow H_2O + Cl\bullet$ (rate constant; 7×10^{-13} cm^3/molecule/s) The half-life of hydrogen chloride in air through the reaction with 10^6 molecule/cm^3 of hydroxyl radicals is calculated to be 11 days[1]. However, this reaction cannot occur in the presence of moisture since hydrogen chloride is dissolved into moisture and exists in its dissociated form. HCl dissociates completely (Cl^- is a very weak conjugate base, therefore the reaction goes to completion), to form chloride ion and hydronium ions[2,3]. $HCl + H_2O \rightarrow H_3O^+ + Cl^-$ Therefore, hydrogen chloride in its gaseous form is not persistent in air[4]. Any reaction with hydroxyl radicals in air will lead to the formation of free chloride radicals. Chlorine is a highly reactive molecule and the chlorine radical is not expected to persist in air. Because of its high solubility in water, hygroscopic nature, strong reactivity and complete ionisation in solution, the form of HCl in the atmosphere will depend on factors such as humidity and the presence of other constituents. A proportion of the anthropogenic releases of hydrogen chloride become rapidly associated with particles. However, as a result of its high solubility, HCl will rapidly dissolve in cloud water or rain and both wet and dry deposition of HCl is rapid, although dry deposition is stated to be limited by physical processes in the atmosphere (meterological conditions such as wind speed and vertical temperature profile). Particulate associated HCl desorbs rapidly and is unlikely to be associated with particulates when it reaches the ground. Due to its reactivity, it can interact with gases such as ammonia (NH_3) and be neutralised. As a result of these removal processes, long range transport from the source area is thought to be of limited importance[5,6]. The $Clocal_{air}$ is predicted to be 1.83×10^{-10} mg/m^3 (normal use) and 2.7×10^{-9} mg/m^3 (worst case) (Document IIB, Section 3.3.3). The contribution of HCl to the atmosphere from the proposed use of	

Doc. IIIA/ Section A7.3.1 **BPD Dataset IIIA/ Annex Point VII.5**	**Phototransformation in air**

Harpic Limescale Remover is considered to be insignificant compared to that from other natural and man-made sources. In the UK alone there were 58.1 kilotonnes of hydrogen chloride produced in 2001, although emissions have been falling over the last 30 years. UK hydrogen chloride monitoring data, produced between 1999 and 2005, show that annual average concentrations in air ranged between 1.2×10^{-4} and 4.1×10^{-4} mg/m^3.[Error! Bookmark not defined.] Ambient atmospheric concentrations of HCl measured in Europe during the 1980s were generally in the range 4×10^{-4} to 4×10^{-3} mg/m^3.

Hydrogen chloride is naturally occurring and is emitted to the atmosphere from both natural and man-made sources (see Document IIA, Introduction). Hydrogen and chlorine are commonly found in the environment. Hydrochloric acid occurs in nature through the reaction of sea salt aerosol with sulphate in the ocean surface and through atmospheric or aquatic degradation of organo-halogens[1]. Also volcano eruptions eject hydrogen chloride into the atmosphere[1]. Hydrogen chloride may also be released into the environment from incineration plants and by open burning or fire including coal and oil at electric utilities[7]. Practically, the emission of hydrogen chloride into the air is usually controlled by absorption in water and neutralization before emission into the environment[1].

In summary, the predicted concentrations of HCl in air as a result of the use of Harpic Limescale Remover are 1.83×10^{-10} mg/m^3 (normal use) and 2.7×10^{-9} mg/m^3 (worst case). The contribution of HCl to the atmosphere from the proposed use is considered to be insignificant compared to that from other natural and man-made sources. The behaviour of hydrogen chloride in air is well understood. Hydrogen chloride will be dissolved into atmospheric moisture and exist in its dissociated form. Hydrogen chloride can react with hydroxyl radicals in air to form free chloride radicals.

Tests on photodegradation in air are therefore considered unnecessary and an estimation of rate constant by the standard method is not possible to perform.

References

[1]SIDS Initial Assessment Report for SIAM 15. UNEP Publications, October 2002

[2]Merck Index (1976), pages 628 and 632, 9th edition.

[3]WHO (1982); Environmental Health Criteria 21: Chlorine and Hydrogen Chloride p. 53. International Programme on Chemical Safety.

[4]Ontario Ministry of the Environment, Standard development Branch. Ontario Air Standards for Hydrogen Chloride.

[5]Coleman P., Mascarenhas R. and Rumsby P. (2005) A review of the Toxicity and Environmental Behaviour of Hydrogen Chloride in Air. UK Environment Agency, Bristol, UK

[6]Kamrin M.A. (1992) Workshop on the Health Effects of HCl in

Doc. IIIA/ Section A7.3.1 **BPD Dataset IIIA/ Annex Point VII.5**	**Phototransformation in air**
	Ambient Air. Reg. Toxicol. Pharmacol. **15**: 73-82 [7]Edison Electric Institute Toxic Release Inventory Hydrogen Chloride. April 2006
Undertaking of intended data submission [ ]	-
	Evaluation by Competent Authorities
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	*13.03.2009*
Evaluation of applicant's justification	*Applicant's justification is acceptable* *There is given very complete scientific argumentation and reference on photodegradation in air. It is shown that the contribution of HCl to the atmosphere from the proposed use of Harpic Limescale Remover or Hydrochloric acid are considered to be insignificant to compare to that from other natural and man-made sources. Additionally the rate constant by the standard method is not possible to perform.*
Conclusion	*Acceptable*
Remarks	_
	COMMENTS FROM OTHER MEMBER STATE *(specify)*
Date	*Give date of comments submitted*
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

Doc. IIIA/ Section A7.3.2 **BPD Dataset IIIA/ Annex Point XII.3**	**Fate and behaviour in air, further studies**	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
Other existing data [ ] **Limited exposure [ ]**	**Technically not feasible [ ]** **Scientifically unjustified [✓]** **Other justification [ ]**	
Detailed justification:	HCl is not to be used in a preparation for fumigants and is not applied as a spray. The fate and behaviour in air is considered to be fully addressed in Document IIIA, Section 7.3.1. Therefore further data/information is not considered to be necessary.	
Undertaking of intended data submission [ ]	-	
	Evaluation by Competent Authorities	
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted	
	EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	*13.03.2009*	
Evaluation of applicant's justification	*Applicant's justification is acceptable*	
Conclusion	*Agree with applicant conclusion*	
Remarks	_	
	COMMENTS FROM OTHER MEMBER STATE *(specify)*	
Date	*Give date of comments submitted*	
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*	
Conclusion	*Discuss if deviating from view of rapporteur member state*	
Remarks		

Doc IIIA / Section A7.4.1.1/01

BDP Data Set IIA / Annex Point VII.7.1

Acute toxicity to fish

Acute toxicity to bluegill sunfish (*Lepomis macrochirus*)

			Official use only
		1 REFERENCE	
1.1	**Reference**	Ellgaard, E.G., and Gilmore III, J.Y (1984) Effects of different acids on the bluegill sunfish, *Lepomis macrochirus* Rafinesque. Department of Biology, Tulane University, New Orleans, Louisiana 70118, USA. J. Fish Biol. (1984) 25, 133-137. Published	
1.2	**Data protection**	No	
1.2.1	Data owner	Not relevant.	
1.2.2	Companies with letter of access	Not relevant.	
1.2.3	Criteria for data protection	No data protection claimed	
		2 GUIDELINES AND QUALITY ASSURANCE	
2.1	**Guideline study**	No guideline stated in the report, but the published study was carried out according to accepted scientific principles.	
2.2	**GLP**	Not applicable to published study.	
2.3	**Deviations**	Not applicable.	
		3 MATERIALS AND METHODS	
3.1	**Test material**	Hydrochloric acid (HCl)	
3.1.1	Method of analysis	Increasing concentrations of acid were use to give a decremental pH series of 7.5, 5.0, 4.5, 4.0, 3.5, 3.25 and 3.0.	
3.2	**Preparation of TS solution for poorly soluble or volatile test substances**	Not applicable.	
3.3	**Reference substance**	Not used	
3.3.1	Method of analysis for reference substance	Not relevant.	
3.4	**Testing procedure**		
3.4.1	Dilution water	Dechlorinated tap water.	
3.4.2	Test organisms	Bluegill (*L. macrochirus*) approximately 4 cm. Supplied by Louisiana Wildlife and Fisheries Commission and maintained in the lab at 23 ± 2 °C, constant light with food (tropical fish food or brine shrimp) supplied each evening. External air filters were used for all aquaria.	

3.4.3	Test system	Five aquaria each contained 8 fish. One aquaria was exposed to HCL, with the another 3 aquaria exposed to other acids (H_2SO_4, HNO_3 and H_3PO_4) with the 5th aquaria left untreated as a control.
3.4.4	Test conditions	Pre-test stabilisation period of 1 week at a pH of 7.5. Fish in the four aquaria were subjected to increasing concentrations of the acids so that the pH was decreased every 96 hours to give a decremental pH series of 7.5, 5.0, 4.5, 4.0, 3.5, 3.25 and 3.0.
3.4.5	Duration of the test	96 hours at each pH.
3.4.6	Test parameter	Mortality
3.4.7	Sampling	Fish mortality was monitored at 24, 48 and 96 hours.
3.4.8	Monitoring of TS concentration	During the 96 hour interval at each pH, acid was added as needed to maintain a constant pH.
3.4.9	Statistics	Not applicable.

4 RESULTS

4.1	**Limit Test**	Not applicable.
4.2	**Results test substance**	
4.2.1	Initial concentrations of test substance	Not reported.
4.2.2	Actual concentrations of test substance	During the 96 hour interval at each pH, acid was added as needed to maintain a constant pH.
4.2.3	Effect data (Mortality)	The LC_{50} values for 24, 48 and 96 hours are given in Table A7.4.1.1/01-1.
4.2.4	Concentration / response curve	Not applicable.
4.2.5	Other effects	Not noted for HCl
4.3	**Results of controls**	
4.3.1	Number/ percentage of animals showing adverse effects	No fish died in control aquaria maintained at pH 7.5.
4.3.2	Nature of adverse effects	No adverse effects reported for the control.
4.4	**Test with reference substance**	Not applicable.

Doc IIIA / Section A7.4.1.1/01

BDP Data Set IIA / Annex Point VII.7.1

Acute toxicity to fish

Acute toxicity to bluegill sunfish (*Lepomis macrochirus*)

5 APPLICANT'S SUMMARY AND CONCLUSION

5.1	**Materials and methods**	The test system was of semi-renewal design, and used Bluegill sunfish (*L. macrochirus*) as the test organism. Eight fish were exposed to a decremental pH series (pH 7.5, 5.0, 4.5, 4.0, 3.5, 3.25 and 3.0) resulting from the addition of the acid HCl. Exposure of the fish to each progressively lower pH level was for 96 hours. A water control was run concurrently.
5.2	**Results and discussion**	No acute mortality due to pH effects resulting from HCl exposure was seen at pH values of 3.5 and above. The 96 hour LC_{50} for HCl is estimated to be between pH 3.5 and 3.25.
5.2.1	LC_0	pH 3.5
5.2.2	LC_{50}	Between pH 3.5 and pH 3.25
5.2.3	LC_{100}	pH 3.0
5.3	**Conclusion**	The 96 hour LC_{50} for HCl was between pH 3.5 and 3.25.
5.3.1	Other Conclusions	The 96h LC_{50} for all the acids investigated in the study (HCl, H_2SO_4, HNO_3 and H_3PO_4) was between pH 3.5 and pH 3.0. No acute mortality was observed in any acid until pH 3.5 or lower. The data indicates that the different anions released by the acids play little role in the toxicity of the acids.
5.3.2	Reliability	2 (see Table A7.4.1.1/01-2)
5.3.3	Deficiencies	Although study not to current guideline, generally accepted scientific principles have been followed and the data are considered to be acceptable for risk assessment purposes.

Doc IIIA / Section A7.4.1.1/01

Acute toxicity to fish

Acute toxicity to bluegill sunfish (*Lepomis macrochirus*)

BDP Data Set IIA / Annex Point VII.7.1

Evaluation by Competent Authorities

Use separate "evaluation boxes" to provide transparency as to the comments and views submitted

EVALUATION BY RAPPORTEUR MEMBER STATE

Date *29.06.2009*

Materials and Methods *Generally agree with applicant version*

No guideline stated in the report. Therefore acute toxicity test to fish was carried out according to accepted scientific principles and are considered to be acceptable for risk assessment purposes.

The TNsG on Preparation of Dosiers and Study Rvolution under Directive 98/8/EC required to use the standard formats for the preperaring complete and uniform documentation of individual tests and studies (Part I, Dossier Preparation 4.4.1.2.). In the current test document some (sub)heading numbers are not included at all because of information not available in published study: 3.1.1. Lot/Bach number ; 3.1.2. Specification; 3.1.3. Description; 3.1.4. Purity; 3.1.5. Stability; 3.1.6. Further relevant properties.

3.4.3 Test system: Should be identified test type - „semi-static".

Results and discussion *Agree with the applicant version*

Probit mortality versus pH or any other statistical method for evaluating dose-response effects to determine LC 50 values are not used. Therefore applicants version should be accepted that the 96 hour LC_{50} for hydrochloric acid is between pH 3.5 and 3.25 according to published study data.

Conclusion *Agree*

The data are considered to be acceptable for risk assessment with restrictions.

Reliability *2*

Acceptability *Acceptable*

Remarks *Unfortunately published study data is relatively limited and caused an incompleteness in the current document. There is not applicable GLP, deviations and statistics. Reference substance not used.*

COMMENTS FROM ...

Date *Give date of comments submitted*

Materials and Methods *Discuss additional relevant discrepancies referring to the (sub)heading numbers and to applicant's summary and conclusion.*
Discuss if deviating from view of rapporteur member state

Results and *Discuss if deviating from view of rapporteur member state*

discussion	
Conclusion	*Discuss if deviating from view of rapporteur member state*
Reliability	*Discuss if deviating from view of rapporteur member state*
Acceptability	*Discuss if deviating from view of rapporteur member state*
Remarks	

Table A7.4.1.1/01-1: Mortality data following exposure to HCl

pH	Cumulative mortality (%)		
	24h	48h	96h
control	0	0	0
5.0	0	0	0
4.5	0	0	0
4.0	0	0	0
3.5	0	0	0
3.25	75	75	88
3.0	100	100	100

Table A7.4.1.1/01-2: Validity criteria for acute fish test according to OECD Guideline 203

	fulfilled	Not fullfilled
Mortality of control animals <10%	Yes	
Concentration of dissolved oxygen in all test vessels > 60% saturation		Not reported but no mortality in control
Concentration of test substance ≥80% of initial concentration during test	Stated pH attained by semi-renewal	

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Acute toxicity to fish

Acute toxicity to bluegill sunfish (*Lepomis macrochirus*)

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		1 REFERENCE
1.1	**Reference**	Cairns, J. and Scheier, A. (1959) The relationship of bluegill sunfish body size to tolerance for some common chemicals. Proc. 13th Ind. Waste Conf., Purdue Univ. Eng. Bull., 96, 243-252. Published
1.2	**Data protection**	No
1.2.1	Data owner	Not relevant
1.2.2	Companies with letter of access	Not relevant.
1.2.3	Criteria for data protection	No data protection claimed
		2 GUIDELINES AND QUALITY ASSURANCE
2.1	**Guideline study**	No guideline stated in the report, but the published study was carried out according to accepted scientific principles.
2.2	**GLP**	Not applicable to published study
2.3	**Deviations**	Not applicable
		3 MATERIALS AND METHODS
3.1	**Test material**	Hydrochloric acid
3.1.1	Specification	Pure Baker analysed.
3.1.2	Method of analysis	A continuous flow of dilution water of uniform pH resulting from the addition of hydrochloric acid was used to maintain a constant pH value throughout the test period.
3.2	**Preparation of TS solution for poorly soluble or volatile test substances**	Not applicable.
3.3	**Reference substance**	Not used.
3.3.1	Method of analysis for reference substance	Not applicable.
3.4	**Testing procedure**	
3.4.1	Dilution water	See Table A7.4.1.1/02-1.
3.4.2	Test organisms	See Table A7.4.1.1/02-2.
3.4.3	Test system	See Table A7.4.1.1/02-3.
3.4.4	Test conditions	See Table A7.4.1.1/02-4.

3.4.5	Duration of the test	96 hours.
3.4.6	Test parameter	Mortality.
3.4.7	Sampling	Mortality count at 24, 48, 72 and 96 hours.
3.4.8	Monitoring of TS concentration	A continuous flow of dilution water of uniform pH, resulting from the addition of hydrochloric acid, was used to maintain a constant pH value throughout the test period. pH measured immediately prior to introduction of fish and at the end of 24, 48, 72 and 96 hour periods.
3.4.9	Statistics	Not applicable.

4 RESULTS

4.1	**Limit Test**	Not applicable.
4.2	**Results test substance**	
4.2.1	Initial concentrations of test substance	A continuous flow of dilution water of uniform pH, resulting from the addition of hydrochloric acid, was used to maintain a constant pH value throughout the test period. pH measured immediately prior to introduction of fish.
4.2.2	Actual concentrations of test substance	A continuous flow of dilution water of uniform pH, resulting from the addition of hydrochloric acid, was used to maintain a constant pH value throughout the test period. pH measured immediately prior to introduction of fish and at the end of 24, 48, 72 and 96 hour periods.
4.2.3	Effect data (Mortality)	See Table A7.4.1.1/02-5.
4.2.4	Concentration / response curve	Not applicable.
4.2.5	Other effects	None stated.
4.3	**Results of controls**	
4.3.1	Number/ percentage of animals showing adverse effects	No fish showed adverse effects in the control.
4.3.2	Nature of adverse effects	Not applicable.
4.4	**Test with reference substance**	Not applicable.

5 APPLICANT'S SUMMARY AND CONCLUSION

5.1	**Materials and methods**	The test system was of flow-through design, and used Bluegill sunfish (*L. macrochirus*) as the test organism. Fish of three different sizes (small, medium and large) were exposed to the acid hydrochloric acid at varying amounts giving set pH levels. Exposure of the fish to each pH level was for 96 hours. A water control

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Acute toxicity to fish

Acute toxicity to bluegill sunfish (*Lepomis macrochirus*)

		was run concurrently.
5.2	**Results and discussion**	
5.2.1	LC_0	Not stated.
5.2.2	LC_{50}	pH 3.5-3.6
5.2.3	LC_{100}	Not stated.
5.3	**Conclusion**	The 96 hour LC_{50} for a range of sizes of Bluegill sunfish (*Lepomis macrochirus*) exposed to hydrochloric acid was determined as concentrations resulting in pH 3.5-3.6.
5.3.1	Other Conclusions	
5.3.2	Reliability	2 (see Table A7.4.1.1-6)
5.3.3	Deficiencies	Although the study is not to current guidelines, generally accepted scientific principles have been followed and the data are considered to be acceptable for risk assessment purposes.

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Acute toxicity to fish

Acute toxicity to bluegill sunfish (*Lepomis macrochirus*)

Evaluation by Competent Authorities	
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	*30.06.2009*
Materials and Methods	*Adopt applicant's version* *Published reference is with a comperatively back number (1959) and no guideline is stated in the test report. Althought accepted scientific principles have been followed. Generally the study results are considered to be acceptable for risk assessment purposes.*
Results and discussion	*Agree with applicant's version* *Probit mortality versus pH or any other statistical method for evaluating dose-response effects to determine LC 50 values are not be used. Therefore applicants version should be accepted that the 96 hour LC_{50} for a range of sizes of bluegill sunfish (Lepomis macrochirus) exposed to hydrochloric acid are concentrations in pH 3.5-3.6.*
Conclusion	*Adopt applicant's version*
Reliability	*2*
Acceptability	*Acceptable*
Remarks	*Purity and stability data not repoted. Statistics, GLP and reference substance are not applicable from the published study.*
	COMMENTS FROM ...
Date	*Give date of comments submitted*
Materials and Methods	*Discuss additional relevant discrepancies referring to the (sub)heading numbers and to applicant's summary and conclusion.* *Discuss if deviating from view of rapporteur member state*
Results and discussion	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Reliability	*Discuss if deviating from view of rapporteur member state*
Acceptability	*Discuss if deviating from view of rapporteur member state*
Remarks	

Table A7.4.1.1/02-1: Dilution water

Criteria	Details
Source	Distilled water plus chemicals listed below.
Analytical or reagent grade chemicals	KCl (0.02 g/L); Na_2SiO_3 (0.02 g/L); $NaHCO_3$ (0.04 g/L); $MgSO_4.7H_2O$ (0.04 g/L);$Ca(NO_3)_2$ (0.03 g/L);$CaC0_3$ (0.01 g/L);K_2HPO_4 (0.002 g/L); Fe+++ (ferric citrate- citric acid) (0.004 g/L).
Oxygen content	5-9 ppm
Holding water different from dilution water	Aged Philadelphia tap water but acclimatisation in dilution water prior to test for 7 days.

Table A7.4.1.1/02-2: Test organisms

Criteria	Details
Species/strain	Bluegill (*Lepomis macrochirus*)
Source	Private fish hatchery in Pennsylvania and from Pennsylvania Fish Commission.
Age/size	small (average 3.88 cm, 0.96 g) medium (average 6.09 cm, 2.80g) large (average 14.24 cm, 54.26g)
Kind of food	Chopped freshly cooked shrimp (15 min in boiling water)
Amount of food	Not stated.
Feeding frequency	Daily
Pretreatment	Acclimation in dilution water for 7 days. No food for 36 hours prior to test.
Feeding of animals during test	None

Table A7.4.1./021-3: Test system

Criteria	Details
Test type	Flow-through
Renewal of test solution	Flow-through rate of 30.6 litres per 24 hours
Volume of test vessels	5 gallon glass jar (approx 19 litres)
Volume/animal	Approximately 1.9 litre for small/medium fish and 3.8 litre for large fish.
Number of animals/vessel	10 small (average 3.88 cm, 0.96 g) 10 medium (average 6.09 cm, 2.80g) 5 large (average 14.24 cm, 54.26g)
Number of vessels/ concentration	A control group of fish was maintained with every series of concentrations at a rate of 10 control fish to 50 test fish.

Test performed in closed vessels due to significant volatility of TS	Glass jars included cork stopper.

Table A7.4.1.1/02-4: Test conditions

Criteria	Details
Test temperature	20° C ± 1 °C
Dissolved oxygen	5-9 ppm
pH	pH values determined exposure to HCl.
Adjustment of pH	A continuous flow of dilution water of uniform pH was used to maintain a constant pH value throughout the test period. pH measured immediately prior to introduction of fish and at the end of 24, 48, 72 and 96 hour periods.
Aeration of dilution water	Compressed air at a rate of approx 160 bubbles/min to maintain oxygen content at 5-9 ppm.
Intensity of irradiation	Not stated.
Photoperiod	Not stated.

Table A7.4.1.1/02-5: 96 hour LC_{50} for three size ranges of bluegill sunfish

Size	(Length, weight)	96 h LC_{50} pH
Small	(3.88 cm, 0.96g)	3.6 (24.6 mg/L)*
Medium	(6.09 cm, 2.80g)	3.6 (24.6 mg/L)*
Large	(14.24 cm, 54.26g)	3.5 (30.9 mg/L)*

*converted values as 12N HCl (as reported in OECD SIDS)

Table A7.4.1.1/02-6: Validity criteria for acute fish test according to OECD Guideline 203

	fulfilled	Not fullfilled
Mortality of control animals <10%	Yes (0% mortality)	
Concentration of dissolved oxygen in all test vessels > 60% saturation	100% oxygen saturation at 20°C is around 8-9ppm therefore maintenance at 5-9 ppm shows that DO was maintained at >55-62%. It is therefore considered that the validity criteria was probably met in the experiment.	
Concentration of test substance ≥80% of initial concentration during test	Yes: A continuous flow of dilution water of uniform pH was used to maintain a constant pH value throughout the test period. pH measured immediately prior to introduction of fish and at the end of 24, 48, 72 and 96 hour periods.	

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Acute toxicity to fish

Acute toxicity to rainbow trout (*Salmo gairdneri*)

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		1 REFERENCE
1.1	**Reference**	Graham, M.S. and Wood, C.M. (1981) Toxicity of environmental acid to the rainbow trout: interactions of water hardness, acid type, and exercise. Can. J. Zool. 59, 1981: 1518-1526 Published.
1.2	**Data protection**	No
1.2.1	Data owner	Not relevant.
1.2.2	Companies with letter of access	Not relevant.
1.2.3	Criteria for data protection	No data protection claimed
		2 GUIDELINES AND QUALITY ASSURANCE
2.1	**Guideline study**	No guideline stated in the report, but the published study was carried out according to accepted scientific principles.
2.2	**GLP**	Not applicable to published study.
2.3	**Deviations**	Not applicable.
		3 MATERIALS AND METHODS
3.1	**Test material**	Hydrochloric acid (HCl)
3.1.1	Method of analysis	pH monitored and adjusted where necessary (at least once a day) with a Radiometer or Corning pH meter and low ionic strength electrode.
3.2	**Preparation of TS solution for poorly soluble or volatile test substances**	Not applicable.
3.3	**Reference substance**	Not used.
3.3.1	Method of analysis for reference substance	Not applicable.
3.4	**Testing procedure**	
3.4.1	Dilution water	See Table A7.4.1.1/03-1.
3.4.2	Test organisms	See Table A7.4.1.1/03-2.
3.4.3	Test system	See Table A7.4.1.1/03-3.
3.4.4	Test conditions	See Table A7.4.1.1/03-4.
3.4.5	Duration of the test	7 days
3.4.6	Test parameter	Mortality

3.4.7	Sampling	Mortality assessment at 4 and 7 days.
3.4.8	Monitoring of TS concentration	pH monitored and adjusted where necessary (at least once a day) with a Radiometer or Corning pH meter and low ionic strength electrode.
3.4.9	Statistics	Probit mortality versus pH constructed in order to determine LC_{50} values. 95% confidence limits and statistical comparisons were assessed by means of the nomographic methods of Litchfield (1949); a significance level of $p \leq 0.05$ was employed.

4 RESULTS

4.1	**Limit Test**	Not applicable.
4.2	**Results test substance**	
4.2.1	Initial concentrations of test substance	pH range 3.0-4.8 attained by addition of appropriate amounts of HCl.
4.2.2	Actual concentrations of test substance	pH was monitored and adjusted where necessary (at least once a day) with a Radiometer or Corning pH meter and low ionic strength electrode. pH variation was virtually nil at the lower part of the test range (pH 3.0-3.6) but increased to a maximum of ± 0.1 unit at the upper end (4.6-4.8).
4.2.3	Effect data (Mortality)	See Table A7.4.1.1/03-5.
4.2.4	Concentration / response curve	Probit mortality versus pH at different times were used to calculate LC_{50} values after 4 and 7 days of exposure.
4.2.5	Other effects	The relationship between HCl and water hardness was found to be complicated. Hard water reduced toxicity at low pH (3.0, 3.2), had no effect at intermediate pH and actually potentiated it at higher pH's (> 3.8). The experiment also compared the effects of acid toxicity when fish exercised. In the short term (1000min) there was a clear potentiation of acid toxicity by exhaustive exercise at pH's ≥ 3.4. However, there was no significant difference between the 4 and 7 day LC_{50} values in rest and exercise treatments. Critical swimming speeds were significantly depressed in all pH's below 4.4 in hard water and below 4.6 in soft water.
4.3	**Results of controls**	
4.3.1	Number/ percentage of animals showing adverse effects	Not stated.
4.3.2	Nature of adverse effects	Not stated.
4.4	**Test with reference**	Not applicable.

	substance	
		5 APPLICANT'S SUMMARY AND CONCLUSION
5.1	**Materials and methods**	The test system was of semi-renewal design (pH adjustments daily where necessary), and used rainbow trout (*Salmo gairdneri*) as the test organism. Ten fish were exposed to a pH range of 3.0-4.8 in 0.2 unit increments by addition of the appropriate amount of HCl. Each of the tests was accompanied by a control having the same number of trout pretreated and held under identical conditions at normal pH (i.e. 6.5-8.0).
5.2	**Results and discussion**	
5.2.1	LC_0	Not stated.
5.2.2	LC_{50}	Four day (96 hour) LC_{50} for HCl was at pH 4.12 in hard water and pH 3.98 in soft water. Seven day (168 hour) LC_{50} for HCl was at pH 4.46 in hard water and pH 4.06 in soft water.
5.2.3	LC_{100}	Not stated.
5.3	**Conclusion**	Four day (96 hour) LC_{50} for HCl was at pH 4.12 in hard water and pH 3.98 in soft water. Seven day (168 hour) LC_{50} for HCl was at pH 4.46 in hard water and pH 4.06 in soft water.
5.3.1	Other Conclusions	The study also concluded that the 96 hour LC_{50} values for sulphuric acid were at pH values of 3.98 and 4.12 in hard and soft water respectively.
5.3.2	Reliability	2 (see Table A7.4.1.1/03-6)
5.3.3	Deficiencies	Although the study is not to current guidelines, generally accepted scientific principles have been followed and the data are considered to be acceptable for risk assessment purposes.

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BDP Data Set IIA / Annex Point VII.7.1

Acute toxicity to fish

Acute toxicity to rainbow trout (Salmo gairdneri)

Evaluation by Competent Authorities	
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	*03.07.2009*
Materials and Methods	*Adopt applicant's version* *No guideline stated in the report, but the published study was carried out according to accepted scientific principles and is considered to be acceptable for risk assessment purposes.*
Results and discussion	*Adopt applicant's version* *To compare with above mentioned studies (A7.4.1.1/01,02) the statistic Probit mortality versus pH were used and LC 50 value after 4 and 7 days of exposure was calculated. Validity criteria for acute fish test according to OECD Guideline 203 are fulfilled.*
Conclusion	*Adopt applicant's version*
Reliability	*2*
Acceptability	*Acceptable*
Remarks	*Acid toxicity is not an absolute for a particular pH value, but a variable dependent upon the water hardness, the activity level of the fish, and probably several other variables (e.g. temperature, buffer capacity) in the environment compartment. Any extrapolation from laboratory toxicity data to field survival criteria should attempt to take these interactions into account.*
	COMMENTS FROM ...
Date	*Give date of comments submitted*
Materials and Methods	*Discuss additional relevant discrepancies referring to the (sub)heading numbers and to applicant's summary and conclusion.* *Discuss if deviating from view of rapporteur member state*
Results and discussion	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Reliability	*Discuss if deviating from view of rapporteur member state*
Acceptability	*Discuss if deviating from view of rapporteur member state*
Remarks	

Table A7.4.1.1/03-1: Dilution water

Criteria	Details
Source	Aerated dechlorinated tap water.
Hard water hardness (140 mg/L as $CaCO_3$)	Ca^+ 2.0-4.0 meq/L Na^+ 0.8-2.0 Cl^- 0.8-2.0 K^+ <0.1
Soft water (hardness 14 mg/L as ($CaCO_3$)	Ca^+ 0.2-0.4 meq/L Na^+ 0.2-0.4 Cl^- 0.2 -1.2 K^+ <0.1
pH	pH being tested as the toxicant – at concentrations of pH 3.0-4.8 in 0.2 increments.
Oxygen content	Water in the 60L system was recirculated at a rate of 10L/min. It is therefore considered that sufficient oxygen saturation should have been attained.
Conductance	Not stated.
Holding water different from dilution water	No.

Table A7.4.1.1/03-2: Test organisms

Criteria	Details
Species/strain	Rainbow Trout (*Salmo gairdneri)*
Source	Spring Valley Trout Farm, Canada
Age/size	Mean weight 3.50 ± 0.09 g Mean length 7.59 ± 0.30 cm
Kind of food	Granular feed, size No. 3 (Martin Feeds, Elmira, Ontario)
Amount of food	Not stated.
Feeding frequency	Not stated.
Pretreatment	Acclimated to experimental temperature and water type for at least 7 days.
Feeding of animals during test	None.

Table A7.4.1.1/03-3: Test system

Criteria	Details
Test type	60-L system recirculated at 10mL/min
Renewal of test solution	pH adjustment daily where necessary.
Volume of test vessels	60L
Volume/animal	6L
Number of animals/vessel	10
Number of vessels/ concentration	1
Test performed in closed vessels due to significant volatility of TS	Not relevant.

Table A7.4.1.1/03-4: Test conditions

Criteria	Details
Test temperature	15 ± 2 ° C
Dissolved oxygen	Water in the 60L system was recirculated at a rate of 10L/min. It is therefore considered that sufficient oxygen saturation should have been attained.
pH	pH being tested as the toxicant – at concentrations of pH 3.0-4.8 in 0.2 increments.
Adjustment of pH	pH being tested as the toxicant – at concentrations of pH 3.0-4.8 in 0.2 increments.
Aeration of dilution water	Water in the 60L system was recirculated at a rate of 10L/min. It is therefore considered that sufficient oxygen saturation should have been attained.
Intensity of irradiation	Not stated
Photoperiod	Not stated

Table A7.4.1.1/03-5: Effect data

Treatment	Hard water LC_{50}	Soft water LC_{50}
HCl		
4 days	4.12 ± 0.08	3.98 ± 0.16
7 days	4.46 ± 0.04[b]	4.06 ± 0.08[ab]

[a] significantly different ($p \leq 0.05$) from corresponding hard water value.

[b] significantly different ($p \leq 0.05$) from corresponding H_2SO_4 value

Table A7.4.1.1/03-6: Validity criteria for acute fish test according to OECD Guideline 203

	fulfilled	Not fullfilled
Mortality of control animals <10%	Not specifically stated.	
Concentration of dissolved oxygen in all test vessels > 60% saturation	Water in the 60L system was recirculated at a rate of 10L/min. It is therefore considered that sufficient oxygen saturation should have been attained.	
Concentration of test substance ≥80% of initial concentration during test	Stated pH attained by semi-renewal	

Section A7.4.1.2 Acute toxicity to invertebrates

Annex Point IIA7.2 *Daphnia magna*

Official use only

1 REFERENCE

1.1	**Reference**	Cross N. (2008) A study to determine the acute toxicity of Hydrochloric Acid to *Daphnia magna*. [redacted] Unpublished
1.2	**Data protection**	Yes
1.2.1	Data owner	Reckitt Benckiser
1.2.2	Companies with letter of access	None
1.2.3	Criteria for data protection	Data submitted to the MS after 13 May 2000 on existing a.s. for the purpose of its entry into Annex I.

2 GUIDELINES AND QUALITY ASSURANCE

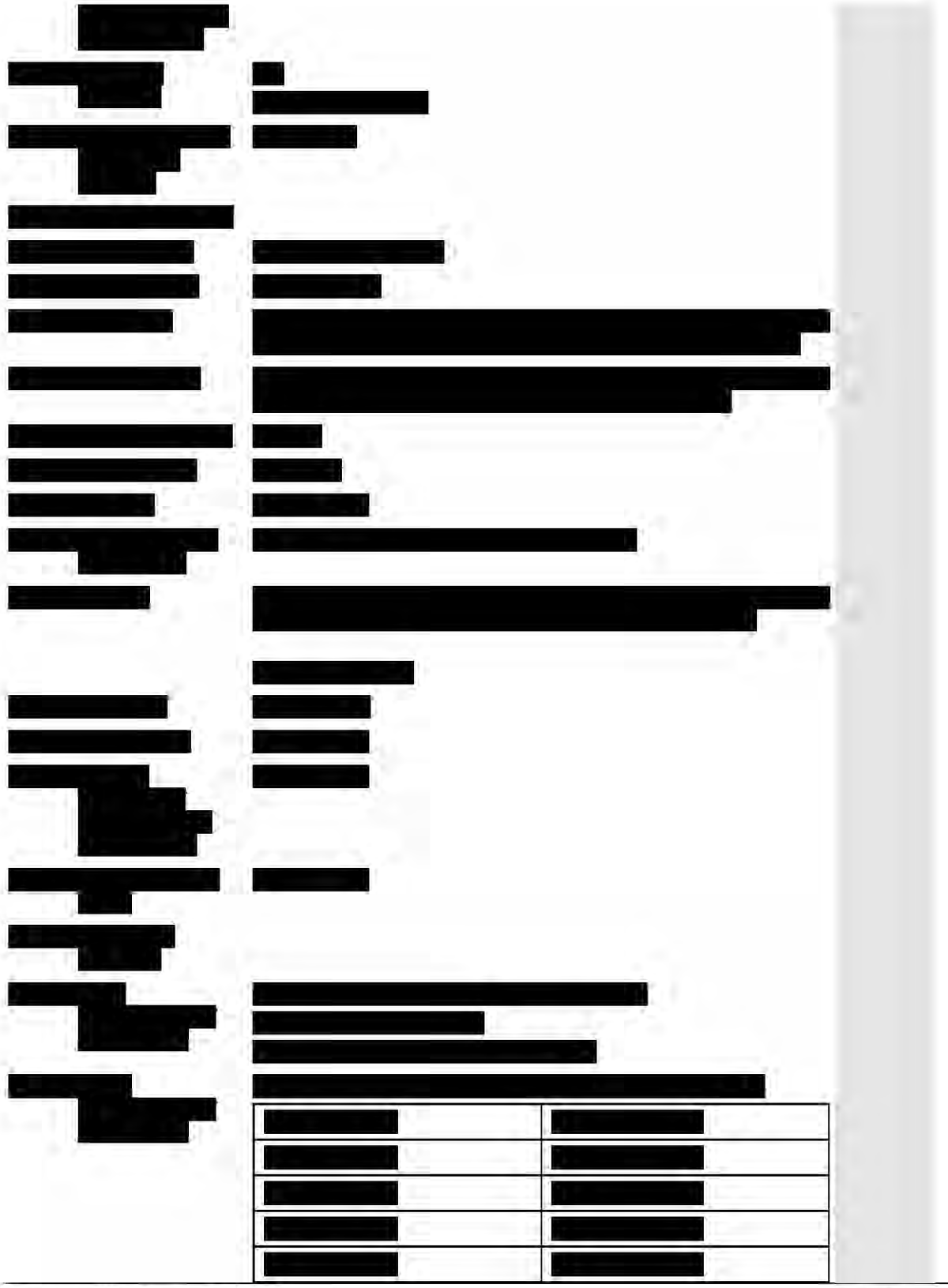
2.1	**Guideline study**	Yes OECD Guideline 202 (2004) Adopted 13 April 2004 Daphnia sp., Acute Immobilisation Test
2.2	**GLP**	Yes
2.3	**Deviations**	No

3 MATERIALS AND METHODS

[redacted]

Section A7.4.1.2
Annex Point IIA7.2

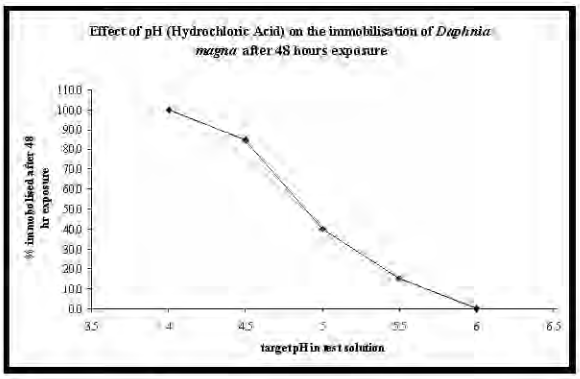
Acute toxicity to invertebrates
Daphnia magna



Section A7.4.1.2 Acute toxicity to invertebrates

Annex Point IIA7.2 *Daphnia magna*

[redacted]



[redacted]

Section A7.4.1.2
Annex Point IIA7.2

Acute toxicity to invertebrates
Daphnia magna

Section A7.4.1.2 Acute toxicity to invertebrates

Annex Point IIA7.2 *Daphnia magna*

Evaluation by Competent Authorities	
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	*17.07.2009*
Materials and Methods	*Accepted* *The standard method were used: OECD Guideline 202 (2004) Adopted 13 April 2004 Daphnia sp., Acute Immobilisation Test.*
Results and discussion	*Generally adopt applicant's version* *4.2.1. Initial concentration of test substance* *There should be an addition: Approximate Concentrations of Hydrochloric Acid in test treatments see enclosed in CEMR-4127, Table 3.* *Discussion on Document CEMR-4127, version 2, Appendix 4:* *OECD Guidelines (Test No.202, Daphnia magna) required that the static test solutions should not be modified during the acute test period and pH should normaly not vary more then 1.5 units in any one test. If the stability of the test substance cannot be maintained, this should be reported and care taken in the interpretation of the results.* *There in the test report (Section A7.4.1.2) the concentrations of active substance – hydrochloric acid were expressed and managed during the acute phase of the study also as pH. It is shown that due to the conditions of static experiment to maintain the pH values stability within nominal or measured initial level in each treatment vessel during the acute test period (48 hr) was very problematic and sometimes unmanageable (CEMAS Report CEMR-4127, Version 2, Appendix 4). Unfortunately the pH adjustment procedure during the acute test period was not described (SOP) and reasons for the pH instability were not clarified or discussed. At this very moment pH stability of test solution in control vessels were good maintain without any pH adjustment.* *As allowed by EC test methods, in this case, when the test substance is not stabile it should be more acceptable to conduct Daphnia magna immobilization test using more effective semi-static test procedure with fresh test solution renewal than static pH adjustment with dropping of 0.05 M hydrochloric acid solution (directly?) into each replicate vessel twice a day to achieved the stability of the target pH.* *5.2.1. EC20 should be shown as :* *EC20 24 hr pH 4,56; 48 hr pH 5.32*
Conclusion	*Agree with the applicant's version: Hydrochloric acid has been shown to have an effect on the immobilisation of Daphnia magna at pH levels of less than 5.5 with 48 h EC_{50} pH 4.92.*
Reliability	*2* *The results considered as sufficient for risk assessment*
Acceptability	*acceptable*
Remarks	*There are under (sub)heading numbers not references on the tables:* *3.4.1.Dilution water (see enclosed table A7.4.1.2-1,2)* *3.4.2.Test organisms (see enclosed table A7.4.1.2-3)* *3.4.3. Test system (see enclosed table A7.4.1.2-4)* *3.4.4. Test conditions (see enclosed table A7.4.1.2-5)*

Section A7.4.1.2 Acute toxicity to invertebrates

Annex Point IIA7.2 *Daphnia magna*

	COMMENTS FROM ...
Date	*Give date of comments submitted*
Materials and Methods	*Discuss additional relevant discrepancies referring to the (sub)heading numbers and to applicant's summary and conclusion.* *Discuss if deviating from view of rapporteur member state*
Results and discussion	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Reliability	*Discuss if deviating from view of rapporteur member state*
Acceptability	*Discuss if deviating from view of rapporteur member state*
Remarks	

Table A7.4.1.2-1: Preparation of TS solution for poorly soluble or volatile test substances

Criteria	Details
Dispersion	No
Vehicle	No
Concentration of vehicle	Not applicable
Vehicle control performed	Not applicable
Other procedures	Not applicable

Table A7.4.1.2-2: Dilution water

Criteria	Details
Source	Elendt M4 (OECD 202)
Alkalinity	Not tested
Hardness	235 mg/L as $CaCO_3$
pH	7.5
Ca / Mg ratio	Not tested
Na / K ratio	Not tested
Oxygen content	8.8 mg/L (Dissolved Oxygen)
Conductance	Not tested
Holding water different from dilution water	No

Table A7.4.1.2-3: Test organisms

Criteria	Details
Strain	Not reported
Source	AstraZeneca Environmental Laboratory, Brixham,UK.
Age	Neonates, less than 24 hours
Breeding method	Not reported
Kind of food	Not reported
Amount of food	Not reported
Feeding frequency	Three times a week
Pre-treatment	None, individuals isolated one hour before test
Feeding of animals during test	No

Table A7.4.1.2-4: Test system

Criteria	Details
Renewal of test solution	None
Volume of test vessels	50 mL
Volume/animal	10 mL
Number of animals/vessel	5
Number of vessels/ concentration	4
Test performed in closed vessels due to significant volatility of TS	No

Table A7.4.1.2-5: Test conditions

Criteria	Details
Test temperature	18 to 20°C
Dissolved oxygen	8.8 to 8.2 mg/L (Control at 0 and 48 hours)
pH	7.50 to 7.53 (Control at 0 and 48 hours)
Adjustment of pH	No (Control) Test solution pH levels were adjusted
Aeration of dilution water	Yes, prior to test start, no aeration during test
Quality/Intensity of irradiation	Light quality not reported. 610 to 650 lux at test solution surface
Photoperiod	16 hour photoperiod daily

Table A7.4.1.2-6: Immobilisation data

Test-Substance Concentration as pH measured	Immobile *Daphnia*						
	Number		Percentage		Oxygen [mg/l]	pH	
	24 h	48 h	24 h	48 h	48 h	48 h	
Control	0	0	0	0	8.2	7.53	
pH 6.0	0	0	0	0	na	6.91-6.99	
pH 5.5	1	3	5	15	na	5.21-5.65	
pH 5.0	1	8	5	40	na	4.41-4.59	
pH 4.5	6	17	30	85	na	4.35-4.47	
pH 4.0	20	20	100	100	8.6	4.23-4.37	

na = Not analysed

Table A7.4.1.2-7: Effect data

	EC_{50}[1]	95 % f.l.	EC_{20}[1]	EC_{80}[1]
24 h [pH]	4.41(n)	-	4.56(n)	4.27(n)
48 h [pH]	4.92(n)	4.69 - 5.13	5.32(n)	4.55(n)

[1]Effect data are based on nominal (n) concentrations

Table A7.4.1.2-8: Validity criteria for acute daphnia immobilistaion test according to OECD Guideline 202

	Fulfilled	Not Fulfilled
Immobilisation of control animals <10%	Yes	
Control animals not staying at the surface	Not given	
Concentration of dissolved oxygen in all test vessels >3 mg/l	Yes	
Concentration of test substance ≥80% of initial concentration during test	Yes	

Criteria for poorly soluble test substances	Not Applicable	

Section A7.4.1.3 Growth inhibition test on algae

Annex Point IIA7.3

Official use only

1 REFERENCE

1.1	**Reference**	Brown, R.J. (2008) Hydrochloric Acid: Toxicity to the green alga *Chlorella vulgaris*. [redacted]
1.2	**Data protection**	Yes
1.2.1	Data owner	Reckitt Benckiser
1.2.2	Companies with letter of access	None
1.2.3	Criteria for data protection	Data submitted to the MS after 13 May 2000 on existing a.s for the purpose of its entry into Annex I

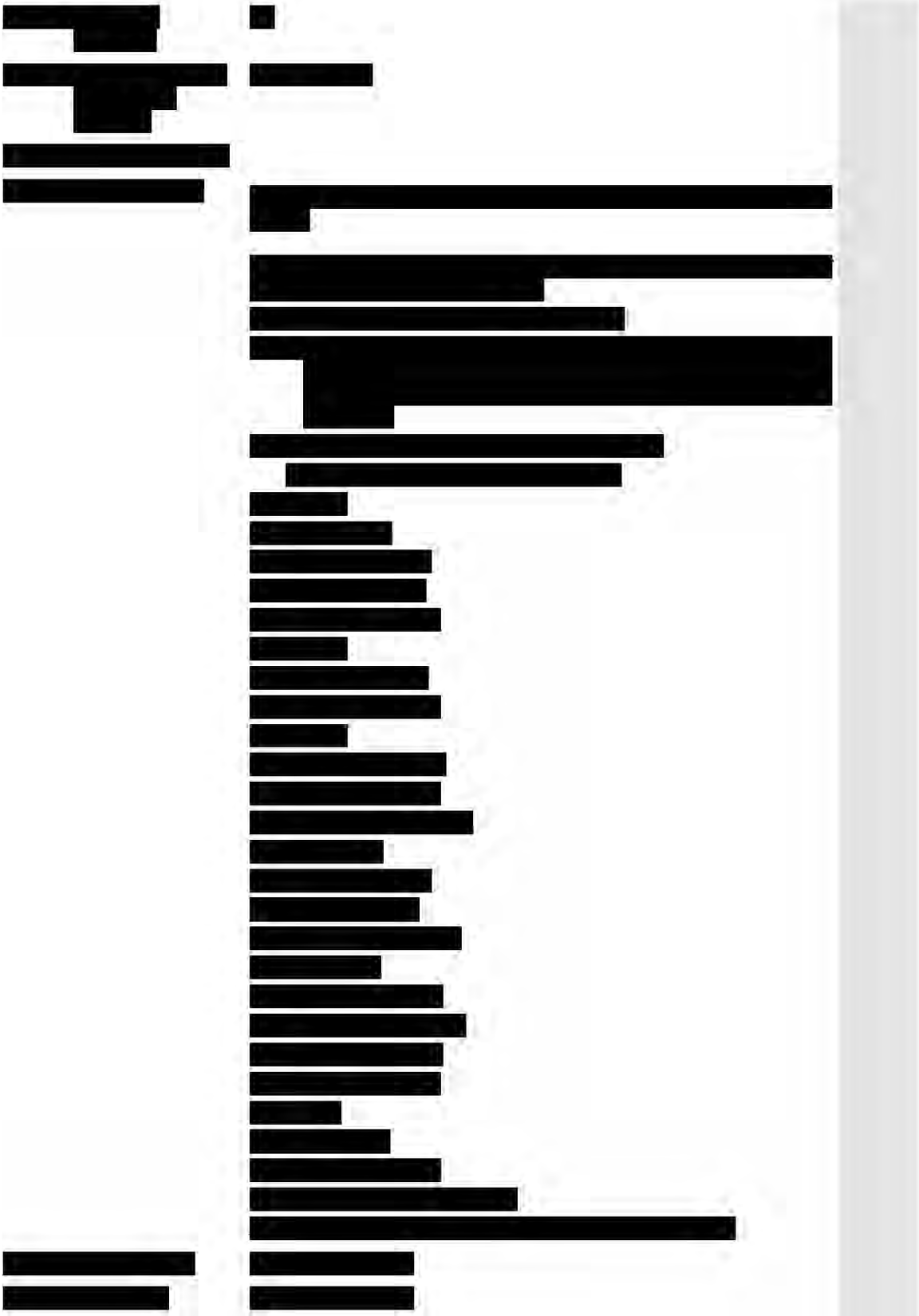
2 GUIDELINES AND QUALITY ASSURANCE

2.1	**Guideline study**	Yes OECD Guideline 201: Freshwater Alga and Cyanobacteria, Growth Inhibition Test. Adopted 23 March 2006
2.2	**GLP**	Yes

[redacted]

Section A7.4.1.3 Growth inhibition test on algae

Annex Point IIA7.3



Section A7.4.1.3 Growth inhibition test on algae

Annex Point IIA7.3

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Section A7.4.1.3 Growth inhibition test on algae

Annex Point IIA7.3

Section A7.4.1.3 Growth inhibition test on algae

Annex Point IIA7.3

Section A7.4.1.3 Growth inhibition test on algae

Annex Point IIA7.3

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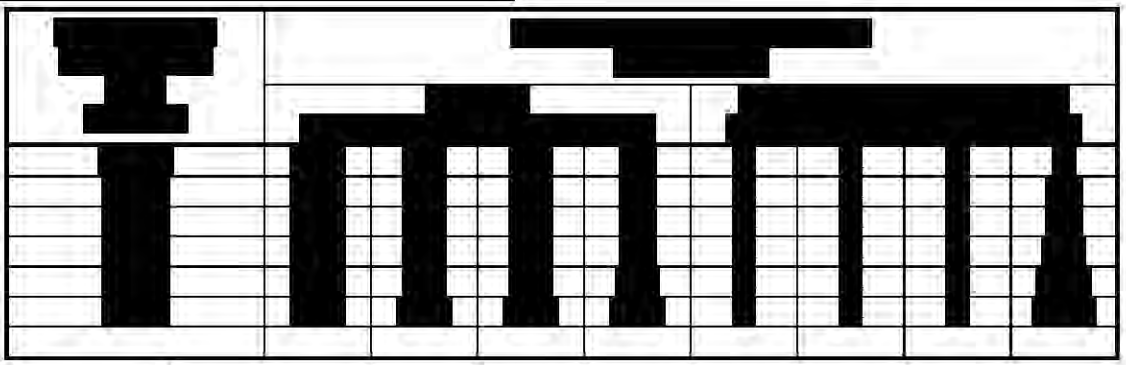

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Section A7.4.1.4 Inhibition to microbial activity (aquatic)

Annex Point IIA7.4

Official use only

1 REFERENCE

1.1	**Reference**	Daniels, M. (2008) Hydrochloric acid: Effect on the respiration rate of activated sludge. [redacted]
1.2	**Data protection**	Yes
1.2.1	Data owner	Reckitt Benckiser
1.2.2	Companies with letter of access	None
1.2.3	Criteria for data protection	Data submitted to the MS after 13 May 2000 on existing a.s. for the purpose of its entry into Annex I

[redacted]

Section A7.4.1.4 Inhibition to microbial activity (aquatic)

Annex Point IIA7.4

Section A7.4.1.4 Inhibition to microbial activity (aquatic)

Annex Point IIA7.4

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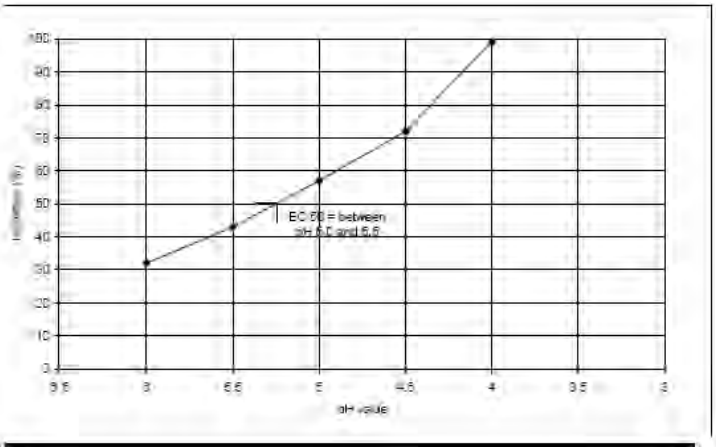

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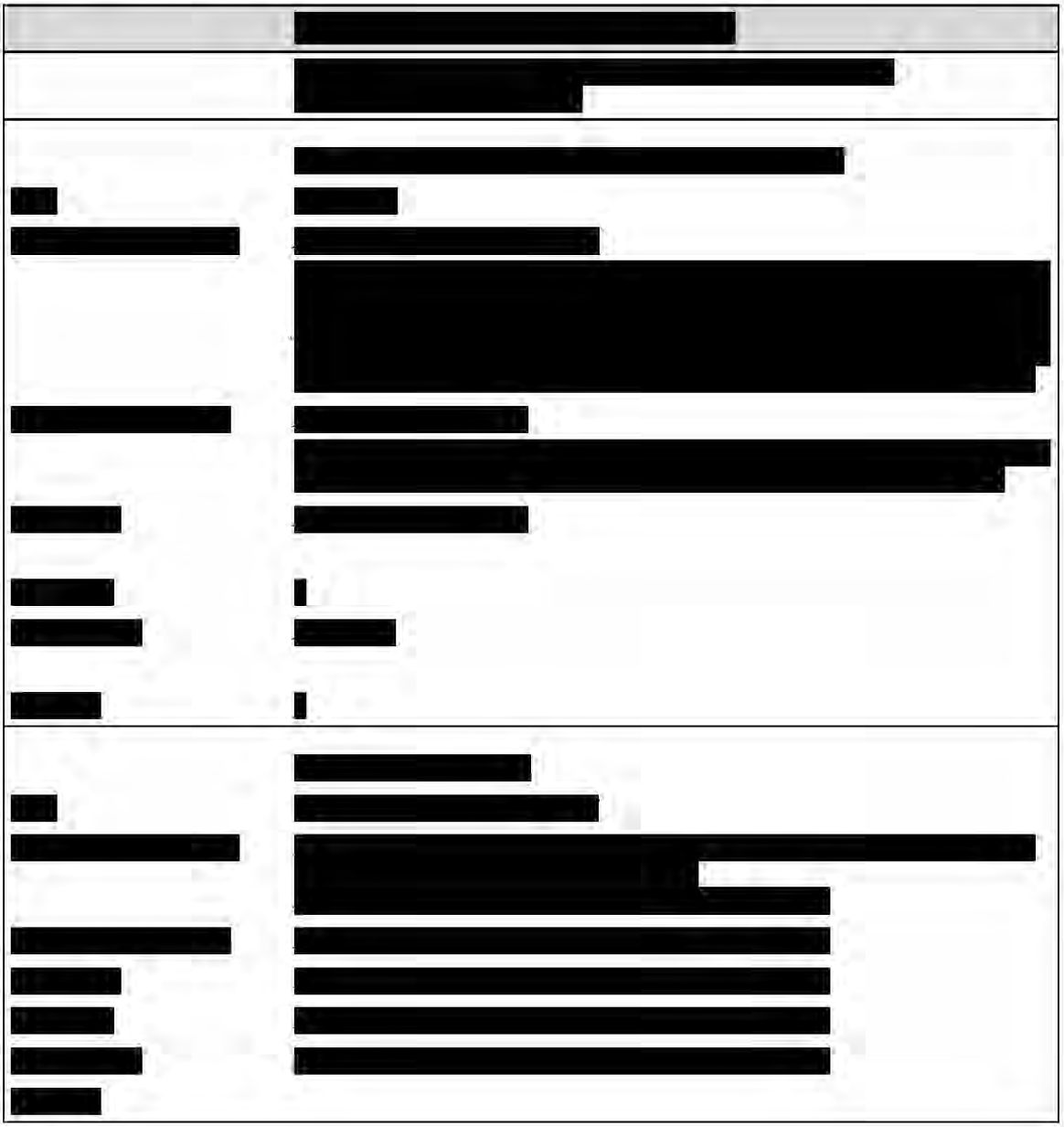
Section A7.4.1.4 Inhibition to microbial activity (aquatic)

Annex Point IIA7.4

Section A7.4.1.4 Inhibition to microbial activity (aquatic)

Annex Point IIA7.4



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Doc IIIA / Section 7.4.2 **BPD Data Set IIA/ Annex Point VII.7.5**	**Bioconcentration** Fate and behaviour in the environment	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
	Technically not feasible [] **Scientifically unjustified [✓]** **Other existing data [✓]** **Limited exposure [✓]**	
Detailed justification:		
	Hydrochloric acid dissociates completely in water (Doc IIA, Section 1.3) and as such it is not possible for bioaccumulation of hydrochloric acid in organisms. There is therefore no scientific justification for a study on bioconcentration.	
	Evaluation by Competent Authorities	
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted	
	EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	*06.07.2009*	
Evaluation of applicant's justification	*Applicant's justification applicable: Based on argumentation (Doc IIIA / Section 7.4.2) and (Doc IIA, Section 1.3) that hydrochloric acid dissociates completely in water and as such it is not possible for bioaccumulation in organisms, there is no scientific justification for a further study on bioconcentration.*	
Conclusion	*Agree with applicant's justification* *Submission of specific test/study data is not required.*	
Remarks	–	
	COMMENTS FROM OTHER MEMBER STATE	
Date	*Give date of comments submitted*	
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*	
Conclusion	*Discuss if deviating from view of rapporteur member state*	
Remarks		

Doc IIIA / Section 7.4.3 **BPD Data Set IIIA/ Annex Point XIII.2.1**	**Effects on aquatic organisms, further studies**	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
	Technically not feasible [] **Scientifically unjustified [✓]** **Other existing data []** **Limited exposure [✓]**	
Detailed justification:	For hydrochloric acid, it is not relevant to determine toxicity in terms of mg/L due to the varying buffering capacity of different test systems and different aquatic ecosystems. Aquatic studies are carried out using buffered media and therefore as discussed for the acute aquatic studies, standard aquatic chronic test methods would lead to differing results based on the different buffering capacity of the specific test systems. Additionally, maintaining exact pH values over time in chronic studies could be problematic. It is accepted that the aquatic toxicity of hydrochloric acid results if sufficient acid is present to produce a very low pH (i.e. pH 3-5 see Doc IIA, Section 4.2). Given that the environmental exposure assessment (Doc IIB, Section 3.3) shows insignificant perturbation of aquatic pH levels from the formulation of the product and its proposed use, it is considered that there is no long-term risk to aquatic organisms and therefore no further aquatic effects data are required.	
	Evaluation by Competent Authorities	
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted	
	EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	*07.07.2009*	
Evaluation of applicant's justification	*Applicable* *There are a lot of methodological difficulties to conduct the standard aquatic chronic test and methods would lead to differing results based on the different buffering capacity of the specific test systems. Also as proposed use of Hydrochloric acid is not long-term and it dissociates completely in water (Doc IIA, Section 1.3), risk to aquatic organisms is not relevant.* *Submission of specific test/study data not required*	
Conclusion	*Acceptable*	
Remarks	*Acid toxicity is not an absolute for a particular pH value, but a variable dependent upon the water hardness, buffer capacity, the activity level of the testorganism, and probably several other variables (e.g. temperature) in the environment compartment. Any extrapolation from laboratory toxicity data to field survival criteria should attempt to take these interactions into account.*	

Doc IIIA / Section 7.4.3 **BPD Data Set IIIA/ Annex Point XIII.2.1**	Effects on aquatic organisms, further studies
	COMMENTS FROM OTHER MEMBER STATE *(specify)*
Date	*Give date of comments submitted*
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

Doc IIIA / Section 7.4.3.1 **BPD Data Set IIIA/ Annex Point XIII.2.2**	**Prolonged toxicity to an appropriate species of fish**	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
	Technically not feasible [] **Scientifically unjustified [✓]** **Other existing data [✓]** **Limited exposure [✓]**	
Detailed justification:	For hydrochloric acid, it is not relevant to determine toxicity in terms of mg/L due to the varying buffering capacity of different test systems and different aquatic ecosystems. Aquatic studies are carried out using buffered media and therefore as discussed for the acute aquatic studies, standard aquatic chronic test methods would lead to differing results based on the different buffering capacity of the specific test systems. Additionally, maintaining exact pH values over time in chronic studies could be problematic. It is accepted that the aquatic toxicity of hydrochloric acid results if sufficient acid is present to produce a very low pH (i.e. pH 3-5 see Doc IIA, Section 4.2). Given that the environmental exposure assessment (Doc IIB, Section 3.3) shows insignificant perturbation of aquatic pH levels from the formulation of the product and its proposed use, it is considered that there is no long-term risk to aquatic organisms and therefore chronic fish effects data are not required.	
	Evaluation by Competent Authorities	
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted	
	EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	*06.07.2009*	
Evaluation of applicant's justification	*Applicant's justification is acceptable* *For hydrochloric acid it is considered that there is no long-term risk to aquatic organisms and therefore chronic fish effects data are not required.*	
Conclusion	*Applicant's justification is acceptable* *Submission of specific test/study data is not necessary.*	
Remarks	*Acid toxicity is not an absolute for a particular pH value, but a variable dependent upon the water hardness, buffer capacity, the activity level of the fish, and probably several other variables (e.g. temperature) in the environment compartment. Furthermore, the influence of any one of these modifying factors is not fixed but may change with the pH level and the presence or absence of other modifiers. Any extrapolation from laboratory toxicity data to field survival criteria should attempt to take these interactions into account.*	
	COMMENTS FROM OTHER MEMBER STATE *(specify)*	

Doc IIIA / Section 7.4.3.1	Prolonged toxicity to an appropriate species of fish
BPD Data Set IIIA/ Annex Point XIII.2.2	
Date	*Give date of comments submitted*
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

Doc IIIA / Section 7.4.3.2 BPD Data Set IIIA/ Annex Point XIII.2.2	Effects on reproduction and growth rate on an appropriate species of fish	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
	Technically not feasible [] **Scientifically unjustified** [✓] **Other existing data** [] **Limited exposure** [✓]	
Detailed justification:	For hydrochloric acid, it is not relevant to determine toxicity in terms of mg/L due to the varying buffering capacity of different test systems and different aquatic ecosystems. Aquatic studies are carried out using buffered media and therefore as discussed for the acute aquatic studies, standard aquatic chronic test methods would lead to differing results based on the different buffering capacity of the specific test systems. Additionally, maintaining exact pH values over time in chronic studies could be problematic. It is accepted that the aquatic toxicity of hydrochloric acid results if sufficient acid is present to produce a very low pH (i.e. pH 3-5 see Doc IIA, Section 4.2). Given that the environmental exposure assessment (Doc IIB, Section 3.3) shows insignificant perturbation of aquatic pH levels from the formulation of the product and its proposed use, it is considered that there is no long-term risk to aquatic organisms and therefore fish reproduction and growth effects data are not required.	
	Evaluation by Competent Authorities	
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted	
	EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	*06.07.2009*	
Evaluation of applicant's justification	*Applicant's justification is acceptable: Proposed use of hydrochloric acid as active substance in biocidal product - disinfectant for individual use as toilet cleaner, allow to consider that there is not expected any considerable inflow of hydrochloric acid directly into the water systems (primary source point is STPs) or long-term exposure to fish reproduction and growth rate.*	
Conclusion	*Acceptable* *Submission of specific test/study for fish reproduction and growth effects data is not required.*	
Remarks	*Acid toxicity is a variable dependent upon the pH and other water variables (e.g. buffer capacity, temperature) in the environment compartment. Any extrapolation from laboratory toxicity data to field survival criteria should attempt to take these interactions into account.*	
	COMMENTS FROM OTHER MEMBER STATE *(specify)*	
Date	*Give date of comments submitted*	
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*	

Doc IIIA / Section 7.4.3.2 **BPD Data Set IIIA/ Annex Point XIII.2.2**	**Effects on reproduction and growth rate on an appropriate species of fish**
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

Doc IIIA / Section 7.4.3.3.1 **BPD Data Set IIIA/ Annex Point XIII.2.3**	**Bioaccumulation in an appropriate species of fish**	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
	Technically not feasible [] **Scientifically unjustified [✓]** **Other existing data [✓]** **Limited exposure [✓]**	
Detailed justification:	Hydrochloric acid dissociates completely in water (Doc IIA, Section 1.3) and therefore will not bio-concentrate in aquatic organisms. Given the lack of significant exposure (Doc IIB, Section 3.3) and inability of hydrochloric acid to accumulate, data on the bioaccumulation in an appropriate species of fish are not required.	
	Evaluation by Competent Authorities	
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted	
	EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	*06.07.2009*	
Evaluation of applicant's justification	*Applicant's justification is acceptable: The bioassays of the hydrochloric acid on bioaccumulation in an appropriate species of fish could not be manageable according to standard method EC C.12. It is an inorganic substance immediately dissociates completely in water (Doc. IIA, Section 1.3.) and any bioaccumulation in a species of fish from a scientifically point of view not possible.*	
Conclusion	*Applicant's justification is acceptable* *Submission of specific test/study data not required*	
Remarks	*Additionally known hydrochloric acid corrosive properties animal welfare should be considerable.*	
	COMMENTS FROM OTHER MEMBER STATE *(specify)*	
Date	*Give date of comments submitted*	
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*	
Conclusion	*Discuss if deviating from view of rapporteur member state*	
Remarks		

Doc IIIA / Section 7.4.3.3.2 **BPD Data Set IIIA/ Annex Point XIII.2.3**	**Bioaccumulation in an appropriate species of invertebrate**	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
	Technically not feasible [] **Scientifically unjustified [✓]** **Other existing data [✓]** **Limited exposure [✓]**	
Detailed justification:	Hydrochloric acid dissociates completely in water (Doc IIA, Section 1.3) and therefore will not bio-concentrate in aquatic organisms. Given the lack of significant environmental exposure (Doc IIB, Section 3.3) and inability of hydrochloric acid to accumulate, data on the bioaccumulation in an appropriate species of invertebrate are not required.	
	Evaluation by Competent Authorities	
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted	
	EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	*06.07.2009*	
Evaluation of applicant's justification	*Applicant's justification is applicable: Hydrochloric acid is an inorganic substance and dissociates completely in water to form chloride ion and hydronium ions (Doc IIA, Section 1.3). No bioaccumulation of hydrogen chloride in aquatic organisms is expected due to its high solubility and dissociation properties. On this basis the study is scientifically impossible to perform and not required (Reference: TNsG on data requirements for active substances and biocidal products 2000, page 18).*	
Conclusion	*Applicant's justification is acceptable* *Submission of specific test/study data not required*	
Remarks	_	
	COMMENTS FROM OTHER MEMBER STATE *(specify)*	
Date	*Give date of comments submitted*	
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*	
Conclusion	*Discuss if deviating from view of rapporteur member state*	
Remarks		

Doc IIIA / Section 7.4.3.4 BPD Data Set IIIA/ Annex Point XIII.2.4	***Daphnia magna* reproduction and growth rate**	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
	Technically not feasible [] **Scientifically unjustified [✓]** **Other existing data [✓]** **Limited exposure [✓]**	
Detailed justification:	For hydrochloric acid, it is not relevant to determine toxicity in terms of mg/L due to the varying buffering capacity of different test systems and different aquatic ecosystems. Aquatic studies are carried out using buffered media and therefore as discussed for the acute aquatic studies, standard aquatic chronic test methods would lead to differing results based on the different buffering capacity of the specific test systems. Additionally, maintaining exact pH values over time in chronic studies could be problematic. It is accepted that the aquatic toxicity of hydrochloric acid results if sufficient acid is present to produce a very low pH (i.e. pH 3-5 – see Doc IIA, Section 4.2). Given that the environmental exposure assessment (Doc IIB, Section 3.3) shows insignificant perturbation of aquatic pH levels from the formulation of the product and its proposed use, it is considered that there is no long-term risk to aquatic organisms and therefore chronic invertebrate effects data are not required.	
	Evaluation by Competent Authorities	
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted	
	EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	*06.07.2009*	
Evaluation of applicant's justification	*Applicant's justification is acceptable: It is considered that hydrochloric acid released into the environment is distributed mainly into the water and air. The primary receiving source point of the biocidal product (and active substance) is STPs and emission of hydrochloric acid as well as significant decrease of the pH in the receiving natural waters is not expected due to its proposed negligible quantity, high buffer capacity and natural range of pH in the aquatic ecosystems.* *Daphnia magna reproduction and growth rate test is conducted in accordance with method EC Test Method C.20 (Directive2001/59/EC) or OECD TG 211(1998). However the principle of the test methods – continuous-flow bioassays, not usable in the case of hydrochloric acid as the maintaining exact pH values over time in chronic studies (21 days) at a range with any precision are very problematic.*	

Doc IIIA / Section 7.4.3.4	***Daphnia magna* reproduction and growth rate**
BPD Data Set IIIA/ Annex Point XIII.2.4	
Conclusion	*Applicant's justification is acceptable* *Submission of specific test/study data not required*
Remarks	–
	COMMENTS FROM OTHER MEMBER STATE *(specify)*
Date	*Give date of comments submitted*
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

Doc IIIA / Section 7.4.3.5 BPD Data Set IIIA/ Annex Point XIII.3.4	**Effects on any other specific, non-target organisms (flora and fauna) believed to be at risk**	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
	Technically not feasible [] **Scientifically unjustified** [✓] **Other existing data** [✓] **Limited exposure** [✓]	
Detailed justification:	Hydrochloric acid is an HPV chemical and is not exclusively manufactured for biocidal purposes in the EU. Based on the conclusions of the Technical meeting guidance (TMI06GEN-item8-human-exposure-manufacture) the manufacturing processes do not have to be taken into account in the exposure assessments for the biocidal uses of such a substance. The environmental exposure assessment for Harpic Limescale Remover (Doc IIB, Section 3.3) concludes that no significant perturbation of pH will occur in either the sewage treatment plant or receiving surface waters following the proposed formulation and use of the product as a toilet cleaner. Emission of hydrochloric acid to air as a result of the proposed use is predicted to be insignificant. Finally, no significant perturbation of soil pH is expected from the proposed use. Given that predictions indicate negligible perturbations of environmental pH levels the need to conduct studies on the effects on other specific, non-target organisms is considered to be scientifically unjustified. It is therefore considered that this additional data requirement is not relevant for the proposed use of hydrochloric acid in the EU.	
	Evaluation by Competent Authorities	
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted	
	EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	*06.07.2009*	
Evaluation of applicant's justification	*Applicant's justification is acceptable: On the basis of arguments no significant perturbation of pH will occur in either the sewage treatment plant or receiving surface waters following the proposed formulation and use of the biocidal product as a toilet cleaner for individual uses. The need to conduct studies on the effects on other specific, non-target organisms is considered to be scientifically and practically unjustified.*	
Conclusion	*Applicant's justification is acceptable* *Submission of specific test/study data not required.*	
Remarks	–	
	COMMENTS FROM OTHER MEMBER STATE *(specify)*	
Date	*Give date of comments submitted*	
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*	

Doc IIIA / Section 7.4.3.5 BPD Data Set IIIA/ Annex Point XIII.3.4	Effects on any other specific, non-target organisms (flora and fauna) believed to be at risk
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

Doc IIIA / Section 7.4.3.5.1 **BPD Data Set IIIA/ Annex Point XIII.3.4**	**Effects on sediment dwelling organisms**	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
	Technically not feasible [] **Scientifically unjustified [✓]** **Other existing data [✓]** **Limited exposure [✓]**	
Detailed justification:	It is considered that the toxicity of hydrochloric acid is based the on the presence of the hydrogen ion (H+) and its effect on pH. Evidence to support this hypothesis is provided in Doc IIA, Section 4.2. The environmental exposure assessment (Doc IIB, Section 3.3) concludes that there will be no significant perturbation of the aquatic environmental pH, including that in the sediment, following the proposed formulation and use of the hydrochloric acid toilet cleaning product. Due to the insignificant effects on sediment pH values, the need to conduct studies on the effects on sediment dwelling organisms is considered to be scientifically unjustified. It is therefore considered that this additional data requirement is not relevant for the proposed use of hydrochloric acid in the EU.	
	Evaluation by Competent Authorities	
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted	
	EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	*06.06.2009*	
Evaluation of applicant's justification	*Applicant's justification is acceptable: On this bases that no significant perturbation of pH will occur in either the sewage treatment plant or receiving surface waters following the proposed formulation and use of the biocidal product as a toilet cleaner for individual uses (Doc IIIA / Section 7.4.3.5) the hydrochloric acid occurrence on sediment and effects on sediment pH values not expected.*	
Conclusion	*Applicant's justification is acceptable and submission of specific test/study data is not required*	
Remarks	_	
	COMMENTS FROM OTHER MEMBER STATE *(specify)*	
Date	*Give date of comments submitted*	
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*	
Conclusion	*Discuss if deviating from view of rapporteur member state*	
Remarks		

Doc IIIA / Section 7.4.3.5.2 **BPD Data Set IIIA/ Annex Point XIII.3.4**	**Aquatic plant toxicity**	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
	Technically not feasible [] **Scientifically unjustified [✓]** **Other existing data [✓]** **Limited exposure [✓]**	
Detailed justification:	It is accepted that hydrochloric acid effects are due to H+ ions and their resultant effect on pH (see Doc IIA, Section 4.2.1). Based on the natural pH of waters, organisms will have different optimum pH conditions, ranging from poorly buffered waters with a pH of 5 to very hard waters with pH values of up to 9. Aquatic plants are not expected to thrive at very low pH values and the buffering capacity of the receiving water body will be the ultimate factor in determining toxicity from hydrochloric acid. Given that the environmental exposure assessment (Doc IIB, Section 3.3) shows insignificant perturbation of aquatic pH levels resulting from the formulation of the toilet cleaning product and its proposed use, it is considered that there is no risk to aquatic organisms and therefore toxicity data for aquatic plants are not required.	
	Evaluation by Competent Authorities	
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted	
	EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	*06.07.2009*	
Evaluation of applicant's justification	*Applicant's justification is acceptable* *The applicant has given a good argumentation. It is shown that the very insignificant perturbation of aquatic pH levels resulting from the formulation of the toilet cleaning product and its proposed use it is could not be expected in receiving waters. In addition the water plant organisms prefers different optimum of pH value in the natural conditions, ranging from poorly buffered waters with a pH of 5 to very hard waters with pH values of up to 9. Hence we may conclude, that the relative high buffering capacity of the receiving water bodies are the ultimate factor for both to stabilized pH and avert toxicity for aquatic plants.* *It is considered that there is no pH risk to aquatic organisms and toxicity data for aquatic plants are not required.*	
Conclusion	*Applicant's justification is acceptable* *Submission of specific test/study data not necessary.*	
Remarks	–	
	COMMENTS FROM OTHER MEMBER STATE *(specify)*	
Date	*Give date of comments submitted*	

Doc IIIA / Section 7.4.3.5.2	Aquatic plant toxicity
BPD Data Set IIIA/ Annex Point XIII.3.4	
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*
Conclusion	*Discuss if deviating from view of rapporteur member state*
Remarks	

Doc IIIA / Section 7.5.1.1 **BPD Data Set IIA/ Annex Point VII.7.4**	**Inhibition to microbiological activity**	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
	Technically not feasible [] **Scientifically unjustified** [✓] **Other existing data** [✓] **Limited exposure** [✓]	
Detailed justification:	It is accepted that the toxicity of hydrochloric acid is based on the presence of the hydrogen ion (H+) and its effect on pH. Based on the aquatic data (Doc IIA, Section 4.2) very low pH is expected to lead to detrimental effects on most soil organisms. The formulation of the product and its use in household toilets (PT2) is not expected to lead to significant exposure of the soil environment (Doc IIB, Section 3.3). Therefore no significant alteration of soil pH is expected from the proposed use. Given that no perturbation of soil pH is expected, no risk to soil microbial activity is anticipated. It is therefore considered that there is no justification for the generation of data on the inhibition of microbiological activity in soil.	
	Evaluation by Competent Authorities	
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted	
	EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	*17.07.2009*	
Evaluation of applicant's justification	*Agree with the applicants justification: No risk of hydrochloric acid to soil microbial activity is anticipated and further studies not needed.*	
Conclusion	*Agree with the applicants justification* *Submission of specific test/study data is not required*	
Remarks	–	
	COMMENTS FROM OTHER MEMBER STATE *(specify)*	
Date	*Give date of comments submitted*	
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*	
Conclusion	*Discuss if deviating from view of rapporteur member state*	
Remarks		

Doc IIIA / Section 7.5.1.2 **BPD Data Set IIIA/ Annex Point XIII.3.2**	**Acute toxicity test to earthworms or other soil non-target organisms**	
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
	Technically not feasible [] **Scientifically unjustified [✓]** **Other existing data [✓]** **Limited exposure [✓]**	
Detailed justification:	It is accepted that the toxicity of hydrochloric acid is based on the presence of the hydrogen ion (H+) and its effect on pH. Based on the aquatic data (Doc IIA, Section 4.2) very low pH is expected to lead to detrimental effects on most soil organisms. The formulation of the product and its use in household toilets (PT2) is not expected to lead to significant exposure of the soil environment (Doc IIB, Section 3.3). Therefore no significant alteration of soil pH is expected from the proposed use. Given that no perturbation of soil pH is expected from the proposed indoor use, no risk to earthworms or other soil macro-organisms is anticipated. It is therefore considered that there is no justification for the generation of acute data on the toxicity of hydrochloric acid to earthworms or other soil macro-organisms.	
	Evaluation by Competent Authorities	
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted	
	EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	*17.07.2009*	
Evaluation of applicant's justification	*Applicant's justification is acceptable: The formulation of the product and its use in household toilets (PT2) is not expected to lead the significant exposure on the soil environment (Doc IIB, Section 3.3). To response on applicants argumentation, no acute toxicity risk of hydrochloric acid to earthworms or other soil non-target organisms is anticipated.*	
Conclusion	*Agree with the applicants justificationis* *Submission of specific test/study data is not required.*	
Remarks	*The hydrochloric acid exposure more expected to water and air compartments.*	
	COMMENTS FROM OTHER MEMBER STATE *(specify)*	
Date	*Give date of comments submitted*	
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*	
Conclusion	*Discuss if deviating from view of rapporteur member state*	
Remarks		

Doc IIIA / Section 7.5.1.3	Acute toxicity to plants	
BPD Data Set IIIA / Annex Point XIII.3.4		
	JUSTIFICATION FOR NON-SUBMISSION OF DATA	Official use only
	Technically not feasible [] **Scientifically unjustified** [✓] **Other existing data** [✓] **Limited exposure** [✓]	
Detailed justification:	It is accepted that the toxicity of hydrochloric acid is based on the presence of the hydrogen ion (H+) and its effect on pH. It is also known that very acid conditions can be detrimental to many species plants. The formulation of the product and its use in household toilets (PT2) is not expected to lead to significant exposure of either the outdoor atmosphere or the soil (Doc IIB, Section 3.3). Therefore no significant perturbation of pH in either the soil or atmospheric moisture is expected. Given that no perturbation of soil or atmospheric moisture pH is expected from the proposed indoor use, no risk to plants is anticipated. It is therefore considered that there is no justification for the generation of acute toxicity data on plants.	
	Evaluation by Competent Authorities	
	Use separate "evaluation boxes" to provide transparency as to the comments and views submitted	
	EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	*17.07.2009*	
Evaluation of applicant's justification	*Applicant's justification is acceptable:The formulation of the product and its use in household toilets (PT2) is not expected to lead to significant exposure of the soil environment (Doc IIB, Section 3.3). Follows that the emmission of the negible hydrochloric acid concenrations no significant perturbation of pH in either the soil or atmospheric moisture is expected. To response on applicants argumentation, there is no justification for the generation of acute toxicity data on plants.*	
Conclusion	*Agree with the applicants justificationis* *Submission of specific test/study data is not required.*	
Remarks	–	
	COMMENTS FROM OTHER MEMBER STATE *(specify)*	
Date	*Give date of comments submitted*	
Evaluation of applicant's justification	*Discuss if deviating from view of rapporteur member state*	
Conclusion	*Discuss if deviating from view of rapporteur member state*	