Chemical Accident Reconstruction Services, Inc.

November 29, 2004 Via Certified Mail

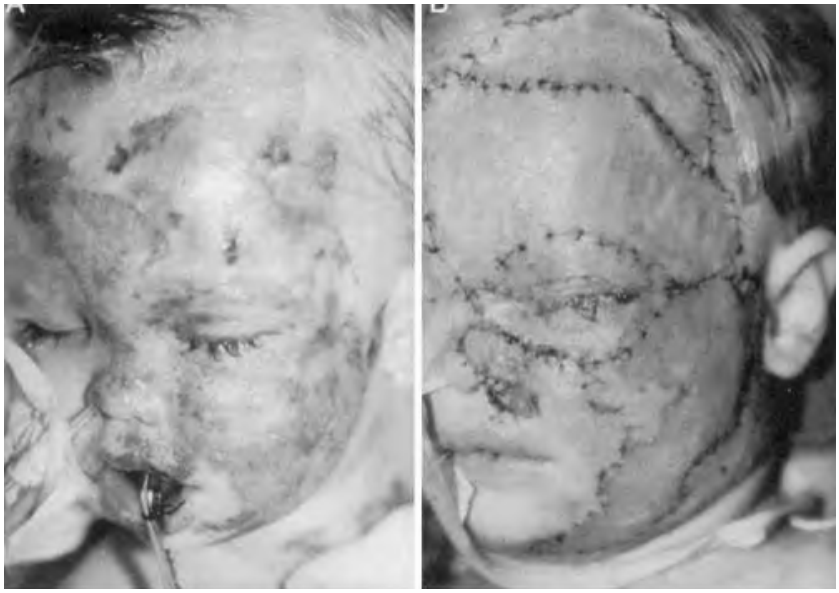
Todd A. Stevenson, Secretary
U.S. Consumer Product Safety Commission
Washington, D.C 20207

Re: Petition to Ban Sulfuric Acid Drain Openers HP 04-2

Dear Mr. Stevenson:

The purpose of this letter is to respond to the sulfuric acid drain opener (SADO) manufacturer's comments to my petition, HP 04-2.

First, I would like to respectfully request that the comment period be extended to allow interested parties that were not aware of the petition to add their views. For example, Hercules Chemical Company may wish to address the negative comments made about them and their motives for their 1977 Petition to limit SADOs to professional use. Since Hercules limits their sales to professionals, they might also bring another perspective concerning consumer versus professional use. The request for an extension of time would also allow some members of the medical profession who have treated SADO burns to bring another viewpoint. For example, the child pictured below was one of the accidental cases discussed in the Journal of Trauma, Injury, Infection and Critical Care by five medical doctors who may want to comment.



Young Victim of Sulfuric Acid Drain Opener (SADO) Accident

9121 E. Tanque Verde Road #105, Tucson, Arizona 85749
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The injury pictured, as well as the injury pictured in the original petition letter, were from accidents that could have happened to any unsuspecting consumers who were unaware of the dangers of SADOs.

It appears that SADO industry members were allowed to respond late with unsigned comments and I just received the industry's comments a few days ago. Since the issue of SADO limitation has been around since the late 1970's, a couple of extra months for evaluation purposes are not likely to change the face of SADO history. I believe it would be in the best interest of public safety to extend the comment period.

The remainder of this letter will be divided into specific responses to topics raised by the SADO industry. Certain salient topics will be addressed, but not every issue will be revisited. Just because a topic is not revisited here does not mean that I agree with the SADO industry on those points. My previous petition letter and SADO report should be consulted for those areas not addressed here.

Hercules and the 1977 Petition

The following are some excerpts from the industry's response concerning Hercules Chemical Corporation's 1977 petition to limit SADOs to professional use:

> "The 1977 petition by Hercules Chemical Corporation was purely based on economics – Hercules wanted to control the market by only selling to the plumbing trade, which they were well entrenched."
>
> "They were also introducing a new product called Double Agent. They asked for the ban as a marketing ploy to introduce this new product."
>
> "Hercules' expressed and documented disappointment was truly over money, nothing more!"

I think these comments speak for themselves and paint a picture of a totally irrational and irresponsible SADO industry. How can anyone look at the photographs of acid scarred children and think that anyone who wanted to eliminate such horrific injuries was motivated solely by money? It is not my role to defend Hercules. Their letter to the CPSC of July 25, 1980 details Hercules' disappointment at the Commission's reversal of the CPSC's earlier decision to ban SADOs (see Attachment A).

Source of Data for Petition HP 04-2

The primary source of data for my petition HP 04-2 comes from the CPSC files that were obtained via the Freedom of Information Act. One of the questions raised by the SADO industry deals with the percentages of SADOs sold to consumers versus professionals. Please see Attachment B is the source of the data. It is an internal CPSC memo dated March 12, 1980 plus a corrective erratum to that memo stating:

> "In 1978, retail sales of alkaline (NaOH and KOH) cleaners were $90 million. Sales of sulfuric acid drain cleaners were $13 million, only $3.2 million of which were sold for use in the home."

Clearly, only 25% of SADO sales were going to consumers for home use. Furthermore, the same memo made the following recommendation:

> "Because of the heat and violence of sulfuric acid's chemical and physical behavior, coupled with the severity of splash back skin burns and eye injuries with their potential for vision impairment, Health Sciences feels that a ban of sulfuric acid drain cleaners is justified, and is the action of choice. This position is taken in the knowledge that:
>
> 1) Public education towards a 'safe' technique for their use is impractical, if not impossible, and
>
> 2) There are several available alternatives, as noted above."

The above excerpt should also address the following comment from the SADO industry:

> "Mr. Fox asserts that the CPSC's Tab was enthusiastic about the petition. We find it hard to believe that Mr. Fox would know the board's emotional state."

The CPSC was also the source of the data that supported the conclusion that the labeling improvements made by the SADO industry in the early 1980s had no effect on subsequent injury rates. Injury rates went up, not down. It is not an opinion, but a fact based on Commission's own data.

Contrived, Theatrical and Esoteric Demonstrations – The Power of Sulfuric Acid

The following are excerpts from the SADO industry's comments:

> "We know that the Commission's opinion in 1981 and 1996 that sulfuric acids are no more dangerous than Alkdos (alkaline drain openers) was not decided by Mr. Fox's *contrived and theatrical* demonstrations, but with a thorough and comprehensive evaluation of information on these two similar, but different products. The CPSC took into account many factors, including that either product, in the unfortunate circumstance, where it would contact the skin, would burn and not consider *esoteric* factors such as to how fast it would burn material."

Once again, I think these comments speak for themselves and once again paint a picture of a totally irrational and irresponsible industry. Are they saying that the photographs of the gruesomely burned children who will have to undergo years of painful reconstructive surgery are *contrived and theatrical demonstrations*?

If indeed the SADO industry believes that conventional SADOs are no more hazardous than conventional alkaline drain openers (ALKDOs), I would like to challenge a member of the SADO industry to a public demonstration. I will pour a conventional ALKDO on my arm while a member of the SADO industry pours a 96-98% SADO on their arm, and we will see who heads for the water first. Good Morning America has expressed interest in this petition, and they may be willing to host the demonstration. Putting the truth in the public eye might be considered as *contrived and theatrical* to some, but to others it might appear educational.

"Esoteric" is an adjective used to describe knowledge that is limited to a small group, suggesting that it is unimportant to the greater population. The characterization of ***how fast*** a SADO will burn skin as "esoteric" says mountains about the SADO industry. It stands as a beacon signaling to the CPSC that the SADO industry does not understand their own product and they have completely missed the point of the petition.

The point of the petition is that sulfuric acid is an extremely hazardous industrial chemical that can cause irreversible eye and skin damage with unusual speed. It does not belong in the hands of the ordinary consumer. Anyone who uses sulfuric acid needs to be trained and drilled on what to do before an accident happens. Because of the speed at which sulfuric acid can cause harm, there is no time to read a label and contemplate what to do. The fact that the SADO industry considers this to be an "esoteric factor" is one further indication that the petition should be granted.

My opinion about the ultra hazardous nature of sulfuric acid echoes that found in the CPSC Health Sciences memo of July 1980 (see Attachment B):

> "Public education towards a 'safe' technique for their (SADO) use is impractical, if not impossible"

The same view about the inherent difficulty of devising an adequate warning label was held by Anthony Temple, M.D. as expressed in his May 13, 1980 letter to the Commission. Evidently, Dr. Temple attended the November 27, 1979 Toxicological Advisory Board (TAB) meeting where he made similar comments. A copy of Dr. Temple's letter is included in Attachment B.

Consumers vs. Professionals

The distinction between a professional and an ordinary consumer is that the professional has had the benefit of the OSHA Hazard Communication Standard.

About this distinction, the SADO industry had the following to say:

> "This paragraph includes suppositions such as all professionals are trained in the use of chemicals (because there is an OSHA standard) and therefore no accidents could be attributed to them. This allows Mr. Fox license to totally eliminate this population from the equation and is a *very partisan invention."*

The OSHA Hazard Communication Standard (29 CFR 1910.1200) should be familiar to the SADO industry and the CPSC. It requires the employers to inform and train their employees about the risks of chemical hazards to which they might be exposed. The training must include safe handling and protective measures as well as what to do in an emergency.

Attachment C contains some materials from industries that use sulfuric acid. These materials reflect the need for training *prior to* using sulfuric acid. For example, the material from Ames Laboratory notes the invaluable nature of a rigorous drill program in response to a sulfuric acid accident.

Most certainly, a person who has been trained about the hazards of a chemical, the methods for its safe use, and what to do in an emergency is less likely to sustain injury than an ordinary consumer who has had no such training and has no idea of the hazards of a chemical. The SADO industry's response seems to be questioning this logic by referring to it as a "partisan invention." Once again, the SADO industry's response speaks for itself. Do they comply with the OSHA Hazard Communication Standard in their factories or do they not see the need to train their employees about the hazards of sulfuric acid?

The SADO industry was presented with a logical distinction between a professional and the ordinary consumer, but did not provide a rational response. Is the SADO industry saying that the OSHA Hazard Communication Standard is a "partisan invention" that does not serve to significantly reduce chemical-related injuries?

It is important to note that the 1996 Commission study on drain openers did not include work-related injuries in the database (see Kissinger, Injury and Death Data Associated with Drain Cleaners, February 1996). Therefore, all the injuries the Commission counted were consumer-related, but the sales they considered were sales to both professional and consumers.

Litigation and Society

The SADO industry said the following with respect to the CPSC's injury database:

> "It would make sense that misuse, neglect or criminal usage was involved in these NEISS reported injuries and the consumers and attorneys knew that. Otherwise, the industry would have these injuries reported through lawsuits or some other measure."

As in the case of work-related injuries, the Commission did not consider criminal-related injuries. In other words, the injuries counted by the CPSC did not include intentional injuries. Had the Commission included intentional injuries, the number of SADO burns would have been greater. For example, the Journal of Trauma, March 1998 reported a substantial number of both accidental *and intentional* burns caused by SADOs. Of 21 reported SADO burn cases, 13 involved the use of SADO as a weapon. Therefore, the total number of SADO burns could very well be double the number of consumer-related burns.

While an argument might be made that some form of misuse or neglect is connected with SADO burns, the role of misuse and neglect is difficult to separate from the ultra hazardous nature of sulfuric acid and the degree to which the consumer is aware of that ultra hazardous nature. If the ordinary consumer does not fully appreciate the extreme hazards they are dealing with, the probability of misuse and neglect will rise.

The SADO industry's logic seems to be that the number of accidental SADO injuries should be one and the same as the number of lawsuits against them. Since the injury data is from the CPSC, they must also be saying they do not believe the Commission because they do not have a corresponding number of lawsuits.

Effectiveness of 1980 Label Improvements

The SADO industry made the following comment about the lack of improvement that followed the early 1980 label improvements:

> "Mr. Fox concluded, that the additional warnings to users had no effect on safer use. Would he also conclude, using his own theory, that zero warnings would have the same outcome? i.e. – people do not completely read warning labels or instructions as manufacturers intend them to do."

The CPSC was the source of the data that supported the conclusion that the labeling improvements made by the SADO industry in the early 1980s had no effect on subsequent injury rates. Injury rates increased after the improvements. This is not a theory or one man's opinion, but an established fact based CPSC data. The industry's question about "zero warnings" is so absurd and rash that it defies a logical response.

If the SADO industry is making the point that consumers do not always read warning labels, then that should be considered by the CPSC in evaluating the petition. Given the extremely hazardous nature of a SADO, it is imperative that:

1) Consumers read the label and all warnings,
2) They read the label and all warnings before they use it,
3) They fully understand the label and warnings,
4) They understand the immediate actions to take in an emergency, and
5) They understand the consequences of not heeding all instructions and warnings.

If the SADO industry is saying that consumers do not even read labels, then that alone justifies the Commission to act favorably on the petition. Simply stated, concentrated sulfuric acid is too ultra hazardous to be placed in the hands of unsuspecting consumers who might not even read the label.

Magic Math – Risks vs. Benefits

The SADO industry made the following comment about the Risks v. Benefits section of my earlier report:

> "Mr. Fox's risk versus benefit argument again seems to be based on something close to *magic math*."

My report used quantitative logic and gave the SADO industry an opportunity to provide their own specific numbers to aid the Commission in their evaluation. Instead, they replied with meaningless jargon and insinuations.

Criminal SADO Usage

The SADO industry made the following comment about the SADO Crime section of my report:

> "Any criminal usage, has no relevance to this petition."

The fact that a SADO can be used as a weapon goes to the powerful chemical nature of the SADO, as well as the ease of purchase by any one of any age or mental state. A convicted felon cannot legally purchase a gun, but is able to buy a SADO. Why would any reasonable person want to discount evidence that a SADO is a powerful industrial chemical that can be used as a weapon?
The criminal use of a SADO is most likely intended to cause permanent disfigurement, usually of women, which carries a very different motive than other common household products that might also be used as weapons.

As noted earlier, the criminal use of SADOs was not considered by the CPSC in their collection of injury data (see Kissinger, Injury and Death Data Associated with Drain Cleaners, February 1996). If criminal usage were included, the total number of SADO incidents would be likely to double.

The Kleenex Syndrome

The Kleenex Syndrome is when one product becomes a common name for all other similar products. If you ask someone for a Kleenex, they might hand you a Charmin Bath Tissue. Another example is the Xerox copy. The SADO industry made the following comments about the Kleenex Syndrome:

> "The Kleenex Syndrome is an interesting story, but has no factual evidence and is one man's opinion."

> "It is not disputed that the (CPSC) data is not perfect, but it must be accepted under the belief that it is predominately correct. Conversely, if this effect was true then there would be Alkdo accidents that were reported as sulfuric acid accidents. Even if we believe that this happened, then it is as many times more likely that Alkdo accidents were reported as sulfuric acid drain opener accidents than the alternative."

The liquid drain opener Liquid Plumber has taken on a Kleenex-like position in the marketplace. Liquid Plumber is an alkaline drain opener (ALKDO). The point made in my report was that hospital staff might write "Liquid Plumber" as the causal agent when

in fact it might have been a SADO. The two are not the same. Therefore, the hospital records would have an unrealistic bias toward ALKDOs as causal agents. There is no Kleenex-like brand name SADO that would be confused with Liquid Plumber. Therefore, the reverse bias would not happen.

The SADO industry did not address the reasoning behind the discussion of the Kleenex Syndrome, which was that there are so many more ways for a SADO to cause harm that it just did not make sense that the injury rates of SADOs and ALKDOs were simply proportional to their market share.

The other point being made by the SADO industry is that while the CPSC data is not perfect, it must be accepted as "predominately correct." Yet, the industry disputes the CPSC data that only 1/3 of SADOs sales were for household use. The industry seems to want to disagree with the CPSC on some issues, but have the CPSC be "predominately correct" on others.

Closing Comments

It is still my professional opinion, as someone who has spent his entire professional life in the field of chemistry, chemical safety and chemical accident investigation that:

1) Sulfuric acid drain openers (SADOs) are unreasonably dangerous and should not be sold to ordinary consumers. SADOs can cause horrific injuries and are unsafe when used in a reasonable and foreseeable manner by ordinary consumers. The risk of danger inherent in SADOs greatly outweighs their benefits.

2) SADOs should only be sold to professionals who have had the benefit of the training required by the OSHA Hazard Communication Standard.

3) If SADOs MUST be sold to ordinary consumers, they should be packaged in one-shot containers, and

4) If SADOs MUST be sold to ordinary consumers in one-shot containers, they should not be greater than 84% in concentration in order to provide a slight time-based safety factor and to reduce the thermal component of SADO injury.

While resistance to an outright ban on the sale of SADOs to ordinary consumers might be expected from the SADO industry, the equal level of resistance to one-shot containers and 84% concentrations comes as a surprise. If all manufacturers were on an even, one-shot, 84% playing field, they might actually increase overall revenues while gaining the

benefits of potentially lower injury rates and hence lower insurance rates. The blind resistance is puzzling.

I appreciate the opportunity to respond to the SADO industry's comments and again respectfully request that the comment period be extended so that others may be heard.

Sincerely,

Michael Fox, Ph.D.
Founder
Chemical Accident Reconstruction Services, Inc.

ATTACHMENT A

Hercules' July 25, 1980 Letter to the CPSC

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July 25, 1980

Mr. Bert Simson
Director
Office of Program Management
Consumer Product Safety Commission
Room 426
Westwood Towers Building
5401 Westbard Avenue
Bethesda, Maryland 20207

Re: Hercules Chemical Company, Inc.,:
Petition To Ban From Interstate
Commerce Sulfuric Acid Drain Cleaners
For Use In Or Around The Household;
HP 78-1

Dear Mr. Simson:

On June 6, 1980, representatives of a group styling itself the Ad Hoc Association of Chemical Producers met with Commission staff concerning the above-entitled petition. At the meeting, as well as in a written statement dated June 5, 1980, the representatives expressed the opposition of the Association's members to Hercules' petition. Hercules now respectfully submits these comments in response to the Association's opposition to the petition and in further support of the petition.

The Inherently Hazardous Nature of Sulfuric Acid Drain Cleaners

In both its oral and written presentations, 1/ the ACP attempts to downplay the inherently hazardous nature of sulfuric acid by citing what it deems the "statistical inadequacies" of the record to date. These efforts by ACP are for one purpose: to further delay the administrative proceeding initiated by Hercules' petition to ban sulfuric acid drain cleaners. The ACP would, to the public's detriment, have the Commission overlook (1) the

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1/ References to the transcript of the June 6, 1980 public meeting between CPSC staff members and representatives of the Ad Hoc Association of Chemical Producers ("ACP") will be to "Tr. ___." References to the written statement submitted by the ACP to CPSC on June 5, 1980 will be to "Statement, at ___."

extremely hazardous nature of sulfuric acid, and (2) the fact that sulfuric acid is an industrial chemical which does not belong on hardware store shelves or in the hands of untutored consumers.

The highly corrosive and explosive attributes of sulfuric acid drain cleaners are well known to qualified scientists and experts. The reaction of the members of CPSC's own Toxicological Advisory Board at its November 1979 session was that there is no way to label sulfuric acid drain cleaners so as to eliminate the unreasonable hazard inherently associated with them in the hands of consumers. In fact, it was the consensus of the TAB members that Hercules' petition to ban the consumer use of sulfuric acid drain cleaners should be promptly and positively acted upon by the Commission.

By letter dated April 24, 1980, Hercules submitted information confirming that severe injuries can be and have been associated with the use of sulfuric acid drain cleaners by consumers. Further confirmation of the hazardous nature of such products is contained in the rulemaking record compiled by the Tennessee Department of Agriculture in 1971 when that Department administratively banned sulfuric acid drain cleaners for retail sale in Tennessee. From that record, Hercules herewith submits copies of:

1. A letter dated May 21, 1980 from Robert M. Reeves, Director of the Tennessee Department of Agriculture, Division of Foods and Dairies, setting forth the regulatory history of the Tennessee ban;

2. A Tennessee county health department report of an investigation concerning persons injured through use of a sulfuric acid drain cleaner;

3. The text of the Tennessee ban; and

4. Several important statements from the public record presented at the hearing on the proposed ban on July 7, 1971.

See Exhibit A. As noted in Mr. Reeves' letter, it took but one incident involving a consumer to convince the State of Tennessee to ban these products from consumer outlets. A review of the investigation report of this incident indicates why this was so. The investigation report states in part:

> One of the victims had poured the substance into a washing machine drain pipe when the mixture exploded. He said it felt like an atomic blast; he added that it sounded like both barrels of a

> double barraled [sic] shotgun going off at once and that the explosion shook the entire house. The exploding mixture covered [the victim]; he sustained severe, possibly total, damage to both eyes, third degree burns to the major part of his forehead, right shoulder, and right arm, second degree burns to his face, left arm, and right arm, and first degree burns to his back and chest. [The victim's spouse], who was preparing dinner at the kitchen stove was not seriously injured although she too was burned on both arms.

This report is eloquent evidence of what can and has occurred when these products are left in the hands of non-professionals. This report alone, Hercules submits, justifies prompt action on the petition.

It is worth noting that the ACP members themselves recognize the hazards associated with consumer use of sulfuric acid drain cleaners. For example, Venus Laboratories, Inc. stated in one of its promotional pieces in 1976:

> It was the early 1950's. A new product for opening up drains appeared. It was the first sulfuric acid based drain opener.
>
> It dissolved paper, cloth and other organic obstructions dramatically. Unfortunately, thousands of people were hospitalized with serious burns from using it.

Exhibit B (emphasis added). 2/

A major problem with consumer use of this product is, as Venus Laboratories states in its literature, that of a "blowout" or "blowback." Mr. Jack Siegel of Instant Plumber describes this as an "eruption." Tr. 42:15-16. But no matter how it is described, the action of sulfuric acid combining with water (which Mr. Siegel describes as "always sitting in the trap under your sink," Tr. 12:21-22) has the potential of forcing the corrosive acid-water

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2/ The statement goes on to claim that in 1974 Venus eliminated the "injury" and "blow-back" problem with the new formula of its "Tempered" product. This is doubtful, however, as it is impossible to render sulfuric acid harmless to skin and mucous membranes without eliminating or significantly reducing the quality for which it is used, i.e., the ability to dissolve organic matter.

combination up the drainpipe and back onto the eyes, face, hands, or body of the unwary consumer. It is this serious problem which, Hercules submits, poses an "unreasonable hazard" to consumers and which, as Mr. Marozzi of the CPSC points out (Tr. 43:3-6), the ACP has not addressed.

Economic Impact Of The Ban

Under Section 9(c) of the CPSA, 15 U.S.C. §2058(c), the Commission will consider the economic impact as part of any proceeding to ban a consumer product. The ACP representatives contend that a ban on consumer use of sulfuric acid drain cleaners will be disruptive of their businesses. The economic impact cannot, contrary to the ACP's assertions, be measured in terms of an absolute ban but should be considered in terms of shifts from a consumer/industry market to an industry market exclusively. Indeed, several of the ACP members already sell to industrial and professional outlets. Of the six ACP members, at least Venus Laboratories, San Teen, and Rooto sell to industrial outlets in addition to consumer outlets. See, e.g., Venus and Rooto catalogs (attached as Exhibits B and C).

The statement that a ban will cause a "Total shut-down" (Statement, at 13) of Venus and Rooto if a ban is promulgated is questionable. The accuracy of these descriptions is belied by the Venus and Rooto promotional literature. The Venus catalog (Exhibit B) lists no less than 174 products other than sulfuric acid drain cleaners which are sold by Venus. Similarly, the Rooto promotional literature (Exhibit C) describes a number of products in addition to sulfuric acid drain cleaners sold by that company. Likewise, an assessment of the economic impact upon Instant Plumber of a consumer ban of sulfuric acid drain cleaners must take into account (a) the fact that Instant Plumber is but one division of Scotch Manufacturing Company, and (b) the fact that in addition to sulfuric acid drain cleaners its sells several other products (see Exhibit D). The prospects are that the other ACP members also market non-sulfuric acid products which would enable them to continue to operate even if, which is unlikely, they were forced to discontinue totally their marketing of sulfuric acid drain cleaners. Thus, it is unlikely that the economic impact on the ACP members of a consumer ban of sulfuric acid drain cleaners will be as great as the ACP statements would lead the Commission to believe.

Also, it should be noted that the post-ban professional market will expand and companies presently involved solely or primarily in the distribution to consumers should be able to adjust their methods of distribution to capture a share of the expanded market.

> One of the principal functions of CPSA is to promulgate safety rules that have the effect of compelling the internalization of these costs to the extent required to meet performance and other safety standards. Internalization of costs previously disregarded by manufacturers will likely result in a rise in cost and price, and may constrict or eliminate the demand for a particular product as consmers substitute products that offer the desired utility at the lowest price. Such an outcome would not be contrary to the intent of Congress so long as the agency has given reasoned consideration to all the pertinent factors and has made the requisite findings supported by substantial evidence. A severe economic impact on an industry, or on a significant segment of an industry, would be a material factor in appraising the reasonableness of a rule, but it cannot, in and of itself, be held to render a safety rule unreasonable.

ASG Indust. v. Consumer Product Safety Commission, 593 F.2d 1323, 1337 (D.C. Cir.), cert. denied sub nom. Flat Glass Assn. of Japan v. CPSC, 100 S.Ct. 133 (1979) (footnote omitted). In summary, Hercules submits that the economic impact of a consumer ban of sulfuric acid drain cleaners will be relatively minimal and that the real and substantial hazards associated with these products dictate that they be banned from household use despite the potential for some economic dislocation.

The Likelihood And Severity Of Injuries Outweigh The Minimal Economic Dislocation Which May Occur

Regardless of whether the Commission finds that the economic impact will be serious or minimal, it is submitted that the likelihood of continuation of injuries to consumers, as well as the serious nature of such injuries, far outweigh any economic impact.3/ The Commission need not, of course, conduct a cost-benefit analysis under the Act. See Aqua Slide 'N' Dive v. Consumer Product Safety, 569 F.2d 831, 840 (5th Cir. 1978); D.D. Bean & Sons v. Consumer Product Safety Com'n, 574 F.2d 643, 648 (1st Cir. 1978); H.R. Rep. No. 1153, 92d Cong., 2d Sess. 33 (1972). Nevertheless a "balancing" is relevant in proceedings such

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3/ Even the ACP concedes that the nature and severity of injuries are crucial factors to be considered in determining whether a risk is unreasonable. See Statement, at 8.

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as the instant one where opponents of the Commission's proposal allege (e.g., Tr. 7) that the risk of injury is not an unreasonable one.

As Congress noted in enacting the CPSA:

> An unreasonable hazard is...one which the effect on the product's utility, cost or availability is outweighed by the need to protect the public from the hazard associated with the product.

H.R. Rep. No. 1153, 92d Cong., 2d Sess. 33. Here, the proposed ban would not deprive the public of the utility or availability of the product as it will still be available through professionals. The ACP alleges that cost increases will occur because consumers will be compelled to use plumbers instead of using the products themselves. While Hercules does not gainsay this, it nevertheless submits that the frequency and severity of injuries associated with sulfuric acid drain cleaners in the hands of consumers far outweigh the increased costs to consumers.

The ACP attempts to downplay both the likelihood and frequency of injuries by alleging a "low" statistical incidence of injuries. The statistics on injuries presently before the Commission (including those submitted by Hercules) amply demonstrate the existence of several injuries associated with consumer use of sulfuric acid drain cleaners. Moreover, the severe nature of the injuries associated with consumer use of sulfuric acid must also be considered. For example, in Aqua Slide, supra, the Court stated that the Commission's discovery of only 11 injuries over a six year period would (in the absence of other record infirmities) have sufficed to support a safety standard because of the severe nature of the injuries involved. 4/ Aqua

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4/ The Aqua Slide Court stated:

> Remote risks have been found "unreasonable," but the context was one in which the safety standard promised to eliminate the danger entirely. United States v. General Motors Corp., 183 U.S. App. D.C. 30, 561 F.2d 923 (1977)(risk of Cadillac steering defect unreasonable under National Traffic & Motor Vehicle Safety Act of 1966, 15 U.S.C.A. §1391(1)), petition for cert. filed, 46 U.S.L.W. 3262 (Oct. 18, 1976); United States v. General Motors Corp., 417 F. Supp. 933 (D.D.C. 1976) (risk of carburetor fire); see Bunny Bear v. Peterson, 473 F.2d 1002 (1st Cir. 1973)(risk of crib mattress

(cont.)

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Slide, supra at 840. Here, a reading of the 1971 Tennessee accident investigation report's description (see supra) of the terrible mutilation suffered by one victim suffices to indicate the serious risk posed by "blowouts" of sulfuric acid in drains. The severity of the accidents, together with their frequency, thus clearly outweigh the putative costs of the proposal.

Impact On Consumers

The utility of sulfuric acid drain cleaners is not an issue here. All agree that the product is highly effective for certain drain stoppage problems. However, the ACP seems to imply (Statement, at 10-11) that sulfuric acid is the drain cleaner of first choice and that it can be routinely used by consumers. In this, the ACP fundamentally misconstrues the utility of these products and thus overstates the impact which a consumer ban will have.

The proper use of sulfuric acid drain cleaners is in "emergency" type situations. If sulfuric acid drain cleaners were, as advocated by ACP, routinely used in lieu of alkali drain cleaners, this could result in a very deleterious effect on plumbing and pipes, particularly on the cast iron and steel pipes (see Exhibit F). Thus, banning consumer use of these products could actually be beneficial in terms of sparing those persons who may be misusing the product the high expense associated with replacing plumbing and drain pipes.

Further Comments Relating To The ACP Presentation

In addition to those points noted above, the ACP oral and written statements contain several other statements or propositions which are inaccurate or misleading. For example, during his presentation Mr. Siegel of Instant Plumber stated:

> ...the heat is dissolving the grease and the hair and you can't get hair out of trap unless you get heat in there.

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fires, Flammable Fabrics Act, 15 U.S.C.A. §1193).

Id. at 840. In the present case, even assuming that the risk is "remote" as the ACP contends (Statement, at 4), there is no question that the rule will substantially reduce the hazard to consumers.

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Tr. 13:18-20. This is simply an incorrect statement. Hair can be chemically dissolved, e.g., by a calcium or sodium hypochlorite/sodium hydroxide drain cleaner. In this regard, it is significant that Mr. Siegel's company promotes its alkali drain cleaner product which it markets under the trade name "Instant Dry Drain Opener" as having the following characteristics:

> Opens drains instantly...grease, hair, soap, other organic obstructions.

See Exhibit E (emphasis added).

Additionally, Mr. Stan Remeneski of Chemical Services and Equipment stated:

> So from a safety standpoint, I feel that the caustic [drain cleaner] is more dangerous than the acid.

Tr. 22:5-7. This statement is controverted by leading texts and experts in the field. Mr. Remeneski's conclusion is apparently based on the premise that alkali drain cleaners are "very slimy" (Tr. 22:1) and therefore difficult to wash off. Yet even this statement is contradicted by Mr. Siegel (the man who touched the sulfuric acid during the demonstration) who says of sulfuric acid: "It's greasy." Tr. 14:12.

As for the demonstration by Mr. Siegel of the "safety" of handling a sulfuric acid drain cleaner (Tr. 12-14), several comments are in order. It must be noted that the potential for injury associated with the highly corrosive nature of sulfuric acid is influenced by several factors, including the toughness of the skin which is exposed to sulfuric acid (e.g., mucous membranes are more susceptible to burns than callous skin), the duration of the exposure to sulfuric acid, and the presence of moisture (sulfuric acid activates more readily in the presence of moisture). Accordingly, it is not surprising that Mr. Siegel could hold his finger, which he carefully dried immediately before exposure, in sulfuric acid for a relatively short time without being burned. However, the picture would dramatically change if moisture were present, if the time period of the exposure were extended, or if the exposure were to more sensitive skin or to a mucous membrane. It is not surprising that this point does not come across in Mr. Siegel's demonstration.

Having Granted Hercules' Petition, The Commission Should Now Propose The Ban And Should Not Reconsider The Granting Of The Ban

The entire thrust of the ACP's presentation is that the agency should now (for some inexplicable reason) refrain from proceeding with publishing its proposal. Representatives of ACP indicate their willingness to "work out an agenda of research and recommendations" (Tr. 45:24-25), yet offer no explanation for why they appeared at the eleventh hour to attempt to derail a regulatory process set in motion almost three years ago. Nor do they explain why they made no presentation or objection at the Commission's December 1978 public meeting at which the petition was granted. Hercules submits that their efforts are too little and came too late, and that it would now be legally inappropriate for the Commission not to proceed with publication of the proposal.

Section 9(a)(1)(B) of the Consumer Product Safety Act ("CPSA"), 15 U.S.C. §2058(a)(1)(B), indicates (when read in conjunction with 16 CFR §1110.12(b)) that, once the Commission has voted to grant a petition, the procedure is for it to proceed expeditiously with the proposal and to reconsider granting the petition only after the period of public comment. For example, Section 1110.12(b) states in relevant part:

> A decision as to the issuance, amendment or revocation of a rule must be made on the basis of all available information developed in the course of the rulemaking proceeding, including information obtained during the period for comment provided under section 9 of the CPSA (15 U.S.C. 2058.

(emphasis added). This regulation indicates clearly and unambiguously that the proper procedure now is to go forth with a proposal in the Federal Register, and if sufficient information is gathered which indicates that these products should not be banned, the agency could withdraw the proposal, but only after it has the public's (and not just the ACP's) comments before it.

The Commission Is Obligated To Publish A Proposal To Ban Sulfuric Acid Drain Cleaners For Consumer Use

While it is the ACP's position that the Commission should delay further before publishing a proposal, it remains Hercules' position (as stated at its December 20, 1979 meeting with CPSC and in subsequent communications) that the Commission should proceed to publish the proposal as expeditiously as possible. In fact, Hercules submits that any further delay in this matter would be

unreasonable and a violation of the provisions of both the CPSA and the Administrative Procedure Act ("APA").

Hercules first submitted its petition to CPSC in October 1977. It took the Commission until December 1978 to grant this petition. At that time, it directed the staff to prepare forthwith a briefing package, including a Federal Register notice proposing a ban. To date, there is still no firm date for publication of the proposal in the Federal Register. Hercules is unaware of any other petition initiated by a person outside the agency which has been pending as long as the instant one. Indeed, other consumer-initiated bans have taken nowhere near as long from initial proposal to publication of the ban.

For example, the petition to ban unstable refuse bins was filed with the CPSC on January 3, 1975 and granted October 7, 1976. Thereafter, the proposal to ban such products was published for comment on January 7, 1977 and the final ban published on June 13, 1977. See 42 Fed. Reg. 30296 (June 13, 1977). The petition to ban extremely flammable contact adhesives was filed on March 12, 1976. The petition was granted and the proposal published on July 13, 1977, and a final ban was published in the Federal Register on December 19, 1977. See 42 Fed. Reg. 63731 (Dec. 19, 1977). The Commission is thus clearly capable of completing action upon petitions to ban hazardous products in as little as 21 months. This should be contrasted with the 33 months which have elapsed since Hercules submitted its petition, and yet the Commission is yet to publish even a proposal.

Section 10(d) of the CPSA, 15 U.S.C. §2059(d), provides in part:

> If the Commission grants such petition, it must promptly commence an appropriate proceeding under Section 2056 or 2057 of this title.

(emphasis added). 5/ See also 16 CFR §1110.12(a). Section 6 of the APA, 5 U.S.C. 555(b), provides:

> ...within a reasonable time, each agency shall proceed to conclude a matter presented to it.

Additionally, Section 10(e) of the APA, 5 U.S.C. §706, provides that the district courts shall

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5/ Although the petition was filed under the Federal Hazardous Substances Act, it was granted under the CPSA whose terms are therefore applicable to subsequent proceedings.

compel agency action unlawfully withheld or unreasonably delayed....

In light of the increasingly convincing evidence before the Commission which supports the ban, Hercules submits that further delay in this matter would be violative of the three statutes quoted above.

Very truly yours,

Thomas O. Henteleff
Glenn E. Davis

Counsel for Hercules Chemical Company, Inc.

Enclosures

cc: Virginia White
Carol Roth, Esquire

TOH/GED/mhs

ATTACHMENT B

March 1980 Internal CPSC Memo and May 1980 Letter

UNITED STATES GOVERNMENT

Memorandum

U.S. CONSUMER PRODUCT SAFETY COMMISSION

TO: Alan Ehrlich, Ph.D., EX-P
THROUGH: Peter W. Preuss, Ph.D., DAED/ESH
THROUGH: Joseph McLaughlin, Ph.D., Director, ESHT
FROM: Marshall F. Driggs, M.D., F.A.C.P., ESHT

DATE: March 12, 1980

SUBJECT: Medical Comments on the Sulfuric Acid Drain Cleaner Hazard

As a supplement to the 1978 Briefing Packages as well as other staff inputs on drain cleaners containing sulfuric acid, the following medical comments are submitted.

The following will briefly be reviewed: 1) chemical and physical characteristics of H_2SO_4, which, while leading to its efficiency as a drain cleaner, also renders it a substantial medical hazard to the consumer; 2) the specific most frequent and dangerous action-or hazard-patterns of acid vs. alkaline cleaners, with body systems involved in accidental encounters; 3) the age groups, frequency, and scenarios of clinical pictures most frequently encountered; 4) alternative consumer choices available if a ban is chosen; and 5) Recommendation.

1) Acid cleaner characteristics related to human injuries

As discussed by Drs. Ehrlich and Marozzi, sulfuric acid is a very strong acid. When sulfuric acid drain cleaners are put in solution with water, they produce an exceedingly corrosive substance, generating about 10 times as much heat as do alkali cleaners. When water is added to H_2SO_4, after the acid has previously been placed on an inert clog in the closed environs of a drain pipe, there may result a hot, destructive splashback. This may explosively and traumatically reach the face, eyes, or other exposed body parts.

Because of these qualities, with the inherent impracticality and complexity of any educational efforts directed at teaching the appropriate technique of safe use, and despite the attempted restriction of its use to professional plumbers rather than by consumers, it is an agent which, almost exclusively, adults and not children even attempt to use or come in contact with. Because of its strength, it is almost impossible to ingest past the mouth; thus, oesophageal strictures and inhalation pneumonias are rarely seen, as they are with alkaline cleaners.

In 1978, forty-seven million quarts of alkaline (NaOH and KOH) cleaners were produced, mostly for home use, and thirteen million quarts of sulfuric acid cleaners; only three million of these were used in the home.

See Signature for changes

2) Hazard Patterns

The hazard patterns of both alkali and acid drain cleaners are theoretically the same. These are: a) violent chemical reactions, with secondary contact burns of skin, including face and/or eyes; b) fumes, with respiratory tract damage and possible secondary pneumonitis on inhalation; and c) ingestion, with mouth and/or throat damage, and oesophageal corrosion and possible stricture, plus inhalation pneumonia being seen predominantly with alkaline cleaners.

3) Cleaner Injury Frequency

As shown by Ehrlich and Jones, acid injuries are more rapid and violent, more severe, and predominantly of surface type - with eye damage the primary serious residuum. Fatalities are encountered predominantly from alkali hazards - primarily through the ingestion mechanism, with lung, gastro-intestinal and nervous system effects the direct cause. Injuries' severity, frequency and mechanisms are shown by NEISS, in-depth-investigations, and death certificates figures. Analysis of splashback situations is of importance in considering the hazards of acid cleaners.

The 1977-1978 NEISS data are shown in Table I.

YEAR	NEISS INJURIES				ESTIMATED TOTAL U.S. INJURIES		
	IDENTIFIABLE AS: ACID	ALKALI	TOTAL	TOTAL SEEN (120 HOSPITALS)	ACID	ALKALI	TOTAL
1977	5	33±	38±	130	130	850	2950*
1978	6°	72	78	102	73	1770	2300*

°4 accidental
2 suicidal

*From NEISS "Identifiable Group" Only

1977 AND 1978 NEISS DATA ON DRAIN CLEANERS, PLUS PROJECTED ESTIMATED TOTAL U.S. INJURIES

TABLE I

It will be noted that in these two years the acid cleaner percentages of the total reported injuries were approximately 13% in 1977, and 4% in 1978 (? result relative share of market place). Also, there was a reduction in the latter year of total injuries of close to 20%.

In-depth Investigations

In 1978, of 61 CPSC drain-cleaner cases involved in in-depth-analyses, 17 (28%) were from acid cleaners, 15 consisted of burns, none of poisoning, and 3 concerned children under 5.

Death Certificates

In 1979, HIA had 16 death certificates on file from cleaners; almost all of them were from alkaline cleaner ingestion (acid cleaner ingestion is very difficult, and also rare).

Splashback Hazards

In splashback situations, either acid or alkaline drain cleaners present a risk of serious eye injury because of the chemicals' corrosive property and the eye's vulnerability. Any hazard-risk differential for the eyes between acid and alkali cleaners is difficult to establish once the eye has been contacted because of these characteristics. Acid cleaners, however, due to the greater heat generated by them in chemical reaction with either water or inert material in the drain, produce both chemical and thermal corrosive skin effects. Because of this, skin injury cases are more likely to occur with acid than alkali cleaners.

From the injury data available in Jones' memorandum, it appears that splashback from drains is more frequent with acid than with alkaline cleaners.

Because of the above facts we feel that the overall risk of contact injury is more serious with acid than with alkaline drain cleaners.

4) Alternatives

Alternatives to acid drain cleaners as products used by consumers include: a) alkaline cleaners; b) professional plumbers' normal use of acid cleaners, properly and safely; c) mechanical mechanisms for cleansing; and d) other grease-removing chemicals.

5) Recommendations

Because of the heat and violence of sulfuric acid's chemical and physical behavior, coupled with the severity of splashback skin burns and eye injuries with their potential for vision impairment, Health Sciences feels that a ban of sulfuric acid drain cleaners is justified, and is the action of choice. This position is taken in the knowledge that 1) public education towards a "safe" technique for their use is impractical, if not impossible, and, 2) there are several available alternatives, as noted above.

BAN

E R R A T U M

The following memorandum (Marshall F. Driggs to Alan Ehrlich, March 12, 1980) contains some errors and should be revised as follows:

Page 1; paragraph 5 -

In 1978, retail sales of alkaline (NaOH and KOH) cleaners were $90 million. Sales of sulfuric acid drain cleaners were $13 million, only $3.2 million of which were sold for use in the home.

McNEIL

McNEIL CONSUMER PRODUCTS COMPANY, CAMP HILL ROAD, FORT WASHINGTON, PA 19034, (215) 836-4500

May 13, 1980

Alan M. Ehrlich, Ph.D.
Program Manager, Acute
Chemical and Environmental Hazards
Office of Program Management
U.S. Consumer Product Safety Commission
Washington, D.C. 20207

Dear Dr. Ehrlich,

I am writing in regard to a previous request relative to the Commission's consideration of a ban on drain cleaners containing sulfuric acid. As you noted, at the Toxicological Advisory Board Meeting of November 27, 1979, I indicated that it would be difficult to devise an adequate warning label for products containing sulfuric acid. As a result of discussion, and because it was clear that this issue would result in excessive delay in formulating the remainder of our labeling, I made a motion that the Board indicate that at that point in time it was going to be a very difficult task to devise an adequate warning label for products containing sulfuric acid. That issue is still unresolved, both by the Board and in my mind.

The reasons for making these determinations were that sulfuric acid drain cleaners produced such a great degree of corrosive effects that it is difficult to appropriately describe in consumer oriented terms an appropriate statement of hazard and also to describe appropriate precautionary use measures. The other items on the label which we have been working with, namely first-aid measures and indications for calling for assistance could indeed be adequately described. Thus, the issues had to do with the appropriate use, handling, and storage of the product. The question really boiled down to whether or not the label could adequately describe the hazard so that a consumer would be adequately warned. If not, then one would have to presume that it could not be labelled appropriately and, therefore, should not be in consumer households.

At this point in time, I do not feel like we have any additional information to help us in determining whether we can write an adequate label. Perhaps input from the members of the Board as a specific agenda item, would again be helpful. And perhaps input from those industries concerned with this particular product might be helpful.

I hope this adequately describes my concerns and position in this matter.

Sincerely,

Anthony R. Temple, M.D. /ncb

Anthony R. Temple, M.D.
Member, Toxicological Advisory Board
Director of Medical Affairs,
McNeil Consumer Products Company

ART/ncb

ATTACHMENT C

Industry Documents on Hazards of Sulfuric Acid

Date Mon, 28 Feb 2000 143515 -0700
From Meredith Brown racer@lanl.gov
Subject: Red Alert Update- Acid Spray Burns Operator

Title: Red Alert Update- Acid Spray Burns Nuclear Chemical Operator

Date February 24, 2000 Identifier 1999-RL-HNF-0038 Update 1

Lessons Learned Statement- Two significant lessons learned surfaced during the investigation of this accident

1. Chlorinated Polyvinyl Chloride (CPVC) piping is vulnerable to impact if not properly supported and protected. Although CPVC piping is quite strong and resilient, it is only plastic. Without proper support, it will break with application of relatively small forces. Additionally, CPVC should not be used in a system that normally operates above a temperature of 120 degrees F due to severe reduction in service life at elevated temperatures.

2. A rigorous drill program is invaluable in preparing operators for responding to casualties. During interviews with operators after the event, many of them commented on how prepared they were to respond to the event because of the training and drills that they had received and performed. The injured operator specifically mentioned that she knew how to get to the safety shower and how long she needed to be under the water as a result of participating in similar drills.

Discussion of Activities- A Nuclear Chemical Operator (NCO) at the Effluent Treatment Facility (ETF) was cleaning an area near an operating 92% sulfuric acid pump. As she bent down to pick up a cloth, the drain line broke and sprayed her with 92% sulfuric acid. The operator immediately moved to an adjacent safety shower where she began flushing her skin and removing her contaminated clothing. She used a Plant Auxiliary (PAX) phone to summon help. She had been wearing the prescribed personal protective equipment for housekeeping activities in that area. Emergency response personnel transported the injured employee by ambulance to a local hospital for treatment. She suffered 1st and 2nd degree burns over 24% of her body -- primarily to one arm, one leg and on one side of her face. She was transferred to Harborview Burn Center in Seattle for additional treatment because she was not experiencing the amount of pain normally associated with acid burns of this type, indicating possible nerve damage. Some of her burns were treated with skin grafts. The spill occurred in a radiological buffer area so surveys of the operator and ambulance were performed. No radiological contamination was found and no chemicals were released from the facility.

Analysis- The chemical berm area is difficult to work in because of the many various systems, structures, and components and marginal illumination. This condition may have contributed to the operator bumping the pipe. The 92% sulfuric acid system had routinely been operated above the temperature alarm setpoint. Alarm response procedures were carried out but no further actions were taken even though the temperature remained above the alarm setpoint. Continued operation at elevated temperatures in contact with strong acid caused the CPVC pipe to loose approximately 60% of its original strength as reported by laboratory analysis of the failed pipe. The use of long sleeve shirts and full-length trousers or long sleeve, full-length coveralls could have reduced the amount of material which contacted the employee's skin and the severity of the resultant burns. Standard personal protective equipment (PPE) may not be adequate to prevent injury in high-risk areas in the event of an accident. Alerting other operations personnel was delayed due to the lack of a shower activation alarm. Cold water in safety showers is uncomfortable and may result in employees not rinsing affected areas with large quantities of water. Additionally, the cold water may complicate emergency medical treatment in the event the injured employee goes into shock.

Recommended Actions- Additional PPE, including chemical goggles instead of safety glasses, should be required for entry into areas such as the acid/caustic pumping berm and the hydrogen peroxide berm. These areas should be distinctly marked and posted with PPE requirements. Flow activation alarms should be installed on all safety showers. The alarms should provide for both audible and visual

local and remote indication in a normally manned location such as the Control Room. Water tempering device(s) appropriate for the chemicals reasonably expected to be encountered in the facility may be installed on facility safety showers. Medical review of such devices is required by OSHA and ANSI standard Z358.1-1998, Emergency Eyewash and Shower Equipment

Estimated Savings/Cost Avoidance N/A
Priority Descriptor RED/Urgent
Functional Categories (DOE) Occupational Safety & Health
Functional Categories (Hanford specific) N/A
Originator Fluor Daniel Hanford, Inc.
Contact Project Hanford Lessons Learned Coordinator; (509) 373-7664; FAX 376-6112; e-mail PHMC_Lessons_Learned@rl.gov
Name of Authorized Derivative Classifier Not required.
Name of Reviewing Official John Bickford
Keyword(s) acid spray, burns, sulfuric acid
References Occurrence report RL--PHMC-200LWP-1999-0010 Accident Investigation Report, Sulfuric Acid Spill and Resulting Injury at 200 Area Effluent Treatment Facility

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[GoTo] Ames Laboratory Lessons Learned, Table of Contents
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Safety Meeting Outline

SMO 97-0504

BE CAUTIOUS WITH SULFURIC ACID

by Mark Stice

Sulfuric acid is widely used in industry for a variety of purposes such as metal cleaning and etching, production of fertilizers, petroleum produces, dyes and explosives. Like all acids it is reactive. Simply put, this means that when the liquid comes into contact with another material, something is going to happen. This is where the danger lies. If sulfuric acid comes in contact with any part of your body, a rapid destruction of tissue takes place, capable of causing severe burns. When a burn occurs, it also gives rise to the possibility of secondary problems such as infection. Burns are never to be considered trivial.

The strength or concentration of acids can vary. If transported in bulk quantities, the acid is usually "full strength." If used as a cleaning agent, it may be highly diluted. In both cases, the material is dangerous. In its concentrated form, sulfuric acid destroys not only the outer skin, it can also penetrate into the flesh under your skin, destroying it. This causes great pain and, if the damage is great enough, may result in shock, collapse or other problems which typically accompany thermal burns. Even dilute concentrations in contact with skin can cause dermatitis, or skin irritation. Prolonged breathing of the vapors or mists can cause respiratory disorders.

Protection: Here is something to think about. Sulfuric acid can burn through your skin into your flesh. It can cause your clothes to disintegrate. It can erode concrete and etch metal. Imagine what a drop or two would do to your sensitive and unprotected eyes. When working with or around Sulfuric acid, eye *and* face protection is a must. Safety glasses alone are not adequate. Wear chemical-type goggles (these have indirect vents), and a face shield. Protective clothing should include, at a minimum, an acid-resistant long apron and gloves. When working with large quantities, you will need to wear an acid-resistant "rain-suit" and high-top boots, with the pant leg extending over the top of the boot.

First Aid - Rapid treatment is ***very*** important. You must wash the acid off the body quickly. Get the victim to the emergency shower or to a hose as quickly as possible. Start washing and as you do so, remove all acid-wet clothing. Keep the water flowing. In cases where there are severe burns, shock may set in. If this occurs, treat for shock by placing victims on their back and keeping them warm. Call immediately for medical help. Do not apply any ointments, oils or other treatments to the burned area.

If acid is swallowed, it burns tissues all the way down to the stomach. Do not induce vomiting, which will cause additional burns as it comes up as well. Never give anything to an unconscious person but, if the victim is conscious, the acid should be immediately diluted. Provide milk, preferably mixed with egg whites. If this isn't available, give as much water to drink as possible.

Prevent contact with sulfuric acid! Pre-determine hazards in your operation and implement a prevention and treatment plan with professional assistance.

Take no chances! Mishaps can be serious.

If you would like a copy of the Eagle Insurance Companies Safety Meeting Agenda please click here