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THE NATURAL RESOURCES DEFENSE COUNCIL, INC.'s  
COMMENTS ON  
REGULATION OF TOXIC AND OTHER WASTE DISCHARGES  
INTO THE NIAGARA RIVER

Presented at the Joint Public Hearing  
Of the New York State  
Assembly Standing Committee on Environmental Conservation  
Assembly Subcommittee on Toxic and Hazardous Substances  
Senate Standing Committee on Conservation and Recreation  
Senate Subcommittee on Toxic Substances and Chemical Waste

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## I. INTRODUCTION

Toxic pollutant contamination of the Niagara River is not a newly discovered problem, although the publication of NYPIRG's Ravaged River report appears to have brought the issue into public focus. Today's hearing is a welcome opportunity for those concerned with the problem and its resolution to pool our knowledge and present what we know to the legislative leaders who have invited our participation. We at the Natural Resources Defense Council are pleased to appear before today's panel and discuss information we have gathered during the last few weeks investigating industrial and municipal discharges into the Niagara.

Information contained in our comments was compiled from testimony prepared by our Washington, D.C., Clean Water Project staff for presentation before a Congressional committee considering the U.S. EPA budget; comments prepared in response to recent proposals by EPA concerning the pretreatment program; and research conducted by our New York staff into the Niagara River situation.

All information presented in this document was gathered independently by NRDC, and to the extent that it corroborates the Ravaged River report's themes, we are pleased to offer our facts in support of the work by the New York Public Interest Research Group. We have attempted not to reiterate information from the Ravaged River report, although for

clarity's sake some duplication has been unavoidable. Due to constraints on time and availability of materials, our research has been much less extensive than that of NYPIRG, but because our work was done within the last two weeks, we are able to update some of the information contained in Ravaged River.

II. THE FEDERAL CLEAN WATER ACT PROGRAM TO CLEAN UP TOXIC INDUSTRIAL POLLUTANTS

The Federal Water Pollution Control Act Amendments of 1972 (P.L. 92-500) established under the U.S. Environmental Protection Agency the basis for a uniform national control system to regulate industrial waste discharges through the National Pollutant Discharge Elimination System (NPDES). The controls relied on use of technology-based standards for dischargers, in which uniform "best practicable treatment" (BPT) would be required of industries, and secondary treatment required of municipal sewage dischargers. The technology was to be upgraded to "best available treatment economically achievable" (BAT) for industries by 1983. As a result of legal challenges and Clean Water Act (P.L. 95-217) amendments to the Act in 1977, the technological standards were further refined, so that under present federal law only certain categories of industries (called "primary industries" and including organic chemical manufacturing, metal plating and finishing, plastics, and other toxic-waste generating industries) will be required to use BAT controls to clean up their effluent by July 1, 1984.

As a kind of back-up to the technological controls, the Act provides that states may impose restrictions tighter than BAT if local water quality so requires. To help states determine acceptable levels of toxic contaminants in water, EPA has set forth water quality criteria for the so-called

"priority pollutants" that EPA has determined are most in need of control on a national basis.

The latest water quality criteria were promulgated by EPA in November of 1980 (45 FR 79318 et seq., Nov. 25, 1980) but effluent guidelines describing Best Available Treatment Technology Economically Achievable have been promulgated for only one industry, the timber products industry. There is no reason to believe that a significant number of other industry BAT guidelines will be promulgated in the near future.

Under the Act EPA is also responsible for instituting national guidelines and standards for indirect industrial dischargers, those industries that discharge into the sewage system. As will be described in Section V of this report, the federal agency is behind in this effort, too.

States like New York, which have assumed delegation of the NPDES permitting system for direct industrial dischargers, and are moving ahead on pretreatment programs, are therefore enforcing a federally mandated regulatory program without the benefit of key federal guidelines upon which the program is based. New York State's Department of Environmental Conservation administers the State Pollutant Discharge Elimination System (SPDES), in which permits currently up for renewal would normally be upgraded to the federal BAT standards, but there are no BAT standards set, except for the timber products industry. Under DEC and EPA auspices, municipalities are setting up pretreatment programs for their Publicly Owned

Treatment Works (POTWS) also in the absence of the needed federal standards and guidelines.

This is indeed a challenge to New York State, its DEC and municipal authorities. As we review below the situation of the Niagara River, however, it will be clear that it is a challenge that must be met if the state's waters are to once again run free of the environmental and public health threats posed by toxic pollutants.

### III. SPDES PERMITS AND PRETREATMENT IN NEW YORK STATE

New York State was delegated responsibility for administering the NPDES permitting program by a letter of agreement with EPA in 1975. Delegation of the pretreatment program is still in the works.

The workload under SPDES and pretreatment is significant. Statewide, there are more than 270 "principal" industrial dischargers with SPDES permits, plus another 1,264 nonprincipal industrial dischargers. More than 56 POTWs across the state are due to set up their own pretreatment program, and another 400 or more will be covered by a statewide pretreatment program to be administered by DEC. A review of federal funding for parts of this effort is illuminating. In the 1981-82 budget submitted to EPA Region II by DEC is a request for roughly half a million dollars of federal funding, to be matched by approximately the same amount in state funding, simply to support "Permits Administration." Some of the tasks covered in the funding report indicate the level of effort currently planned by DEC. The Bureau of Industrial Programs and Permits and Compliance, for example, plan to put in eight person-years of engineering time during this one-year period preparing an estimated 350 "toxics-oriented" industrial SPDES discharge permits. The "ideal" listed in the work plan is 554 permits, but DEC reports that the ideal "is not considered achievable due to absence or inadequacies



of federal effluent rules and regulations," and adds that there is "no shortage of resources" in DEC for the job. One office has a computer printout obtained from DEC listing 267 "priority" industrial permittees that Mr. Tony Adamczyk of the department's Bureau of Industrial Programs predicts will be renewed by Spring of 1982.

More than 25 person-years in various bureaus are planned for servicing the pretreatment program during the next year, mostly to be devoted to assisting in the development of local pretreatment programs. An additional 10 person-years are earmarked in the regional offices for work on the pretreatment program.

The Bureau of Monitoring and Surveillance plans to put more than three person-years of time into determining "reasonable water quality based effluent limitations reflecting toxic substances of concern" for an estimated 510 permits during the year. These permits would presumably involve discharges for which technological effluent standards would not be sufficiently protective of receiving waters. This Bureau has also projected about full person-year for revising surface water standards, "particularly for toxic substances."

The budget and personnel figures cited here were taken from documents prepared by DEC and EPA as part of the SEA (State-EPA Agreement) development process. By referring to these figures we do not purport to be reviewing the full range of DEC efforts related to SPDES and pretreatment, but only to show levels of activities apparently planned for certain key elements of the SPDES and pretreatment programs.

IV. SPDES PERMITS IN THE NIAGARA RIVER BASIN

This section summarizes 13 of 25 principal industrial dischargers to the Niagara River, their SPDES permit status, and the kind of pollution problems they may contribute.

TABLE I

SUMMARY OF PRINCIPAL NIAGARA RIVER INDUSTRIAL DISCHARGE PERMITS

<u>Toxic*</u>	<u>SPDES #</u>	<u>Facility Name</u>	<u>Permit Expiration Date</u>	<u>Included In This Report**</u>
Yes	0001881	Republic Steel	9/30/80	No
No	0001023	Niagara Mohawk Power	9/30/80	No
No	0001376	Carborundum Co.	6/1/85	Yes
Yes	0003328	DuPont	3/31/81	Yes
Yes	0000574	GMC Chevrolet	10/31/79	No
Yes	0001198	Hooker Chemical Corp.	3/31/81	No
No	0000337	FMC Corporation	3/1/86	Yes
Yes	0003336	Hooker Chemical Corp.	3/31/81	Yes
Yes	0002160	Allied Chemical Corp.	3/31/81	Yes
Yes	0001635	Olin Corp.	6/30/81	Yes
No	0000736	Power Authority, N.Y.S.	6/1/83	No
Yes	0072061	SCA Waste Services	5/1/86†	Yes
No	0001481	Allied Chemical Corp.	Draft Permit	Yes
Yes	0001651	Stauffer Chemical Co.	4/1/84	No
Yes	0002399	Tonawanda Coke Corp.	9/30/80	No
Yes	0000060	Union Carbide	8/1/86	Yes
No	0001601	DuPont	3/31/81	No
Yes	0000230	N.L. Industries	6/30/81	No
No	0002470	Buffalo Color Corp.	5/1/86	Yes
No	0069019	Conrail	5/1/85	No
Yes	0003310	Donner-Hanna Coke	9/30/80	No
Yes	0001996	Dresser Industries	Draft Permit	Yes
Yes	0001597	Hanna Furnace	9/30/80	Yes
Yes	0001210	Westinghouse Electric	7/1/86	Yes
Yes	0000361	Peavey Co.	10/1/84	No

\* As classified in DEC permit files.

\*\* Details on 13 permittees were obtained during a November 25, 1981 review of DEC files in Albany, conducted by Richard Card.

† Modification in progress.

The information on Table 1 above was obtained from a DEC computer list printed on October 7, 1981. As the table indicates, 25 permitted principal discharges occur in the Niagara River Basin. DEC has classified eight of these as "non-toxic," indicating that the department does not believe priority pollutants are present in the effluent. Ten "2nd Round" permits are currently effective, and two more are in the draft stage. Six of these 2nd Round permits have been issued to "non-toxic" discharges, indicating that DEC has chosen to renew its least controversial permits without the assistance of EPA effluent guidelines. We understand from discussions with DEC personnel that three of the remaining six permits are considered to represent BAT.

In preparing this material, NRDC inspected the files of 13 principal Niagara River discharges. The following paragraphs give a short description of each of these 13 permittees' manufacturing activities, then compare the present SPDES permit limitations to what has actually been detected in the particular discharge.

1. Expired Permits

Thirteen principal dischargers are operating under the conditions of expired SPDES permits. Under state law these permits may remain in effect until new ones are written. Five of these facilities are characterized below.

A. E.I. DuPont de Nemours, Niagara Falls  
NY003328  
SIC Code 2819,2810,2869

The facility manufactures plastics, synthetics and elastomers, organic and inorganic chemicals, sodium chlorine, metal cyanide and polytetramethylene ether glycol. The plant is now operating under the conditions of its old permit that expired March 31, 1981. This permit contains no monitoring or effluent limitations for toxic substances.

The permit renewal application (Form 2C) for this facility, received by DEC July 31, 1981, indicates that many priority pollutants are present in this 15 MGD discharge. The results of effluent testing are presented below.

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TABLE 2

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DUPONT (NY00003328) 2C EFFLUENT TESTING

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Antimony	6.0 ppb
Arsenic*	.6 ppb
Cadmium	.3 ppb
Copper	14.0 ppb
Mercury	6.2 ppb
Silver	4.0 ppb
Zinc	29.0 ppb
Cyanide	18.0 ppb
Phenols	44.0 ppb
Chloroform*	73.0 ppb
Methylene Chloride	73.0 ppb
Tetrachloro-ethylene*	10.0 ppb
Dichloro-ethylene*	13.0 ppb
Trichloro-ethylene*	6.0 ppb

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\* Potential carcinogens.

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These testing results reveal that metals and volatile organic compounds are present in the discharge in detectable quantities. Many of these substances have been identified as potential human carcinogens. These facts become more alarming when one realizes that DEC has classified this discharge as "non-toxic." The 2nd Round permit should address this toxic problem through the use of monitoring requirements and effluent limitations. According to DEC's card catalogue of permit development, the draft permit for this facility should be completed by January 1981. The application of BAT to the discharge would be likely to reduce the toxic load to the Niagara River.

B. Hooker Chemical Corporation, Niagara Falls  
NY0003336  
SIC Code 2812

This facility is the largest chemical manufacturing plant in New York State. Its major products include chlorine and caustic soda, as well as a variety of specialty organic and inorganic chemicals. Most of these products are intermediates for the manufacture of pharmaceuticals, polymers, plastics, resins, dyes, glass, rubber, pesticides, or synthetic fibers.

The facility is currently operating under the conditions of its old permit, which expired March 31, 1981. This permit limits the total discharge of halogenated organics to a maximum of 284 pounds/day, toluene to 14 pounds/day,

mirex to less than .001/mg/l in each discharge, mercury to 0.15 pounds/day; also it requires monitoring for monochlorotoluene and dichlorotoluene.

While the permit does address toxic substances, the stringency with which it does so is open to question. For example, if one assumes that the Hooker discharge is 50 MGD as reported in the permit application, then the 284 lbs./day limit for halogenated organics translates into a total concentration of 680 ppb. Even with the large dilution capacity of the Niagara River, this discharge limitation is excessively high. EPA's 1980 water quality criteria recommend that in-stream concentrations of one of the halogenated organics, trichloroethylene, not exceed 27 ppb for the protection of human health.\* Similarly, the ambient concentration of tetrachloroethylene should not exceed 8 ppb. The total halogenated organics effluent limit, therefore, allows the discharge of these potential carcinogens in concentrations greatly exceeding recommended EPA ambient water quality criteria.

A good deal of information has been gathered concerning Hooker's discharge of priority pollutants. On September 13th and 14th, 1978, EPA tested the discharge specifically for toxic chemicals. As part of its SPDES permit monitoring requirements, Hooker has submitted regular findings on halogenated organics and chlorinated toluene in its effluent.

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\* (45 FR 79341, Nov. 28, 1980)

Hooker has completed another study, "Report on Wastewater Outfall Sewers," in September, 1980. Finally, the renewal application form 2C was submitted to DEC May 4, 1981, and gives detailed sampling results of priority pollutants in the discharge. The results of this most recent testing are presented in Table 3 (page 14).

These results confirm the other findings indicating that significant amounts of organic pollutants are contained in the Hooker discharge. Three separate studies have indicated that tetrachloroethylene and trichloroethylene are both discharged in the 10-15 lbs./day range. There appears to be enough data to set individual limits for organic pollutants. Hopefully such a step will be undertaken in the upcoming draft permit.

C. Allied Chemical Corporation, Buffalo  
NY 0002160  
SIC Code 2819

This facility manufactures inorganic chemicals, including sulfuric acid, oleum, oxalic acid, ammonium thiosulphate, nitric acid, and ferric nitrate. Its four discharge points emit 12.09 MGD of wastewater, 5 MGD of which is contact cooling water. The expired SPDES permit limited cadmium mass loadings to 2.6 lbs./day and copper to 5.0 lbs./day.

Allied's permit application form 2C was received by DEC on February 18, 1981. No priority pollutants were found in detectable quantities.

TABLE 3

HOOKER (NY0003336) 2C EFFLUENT TESTING

Chemical	Outfall							
	001		002		003		005	
	ppb	lbs/day	ppb	lbs/day	ppb	lbs/day	ppb	lbs/day
Antimony	120	5.6			130	4.95	17	1.12
Arsenic	15	.7			51	1.94		
Beryllium	4	.19						
Chromium	93	4.35	230	.161	300	11.4	17	1.12
Copper	37	1.73			82	3.12		
Lead	4	.19						
Nickel	35	1.64			290	11.03	16	1.06
Selenium	3	.14						
Silver	6	.28						
Thallium	2	.09						
Zinc	49	2.29	120	.084	96	3.65	51	3.37
Phenols	43	2.01					15	.99
Benzene							13	.86
Carbon Tetra- chloride					19	.72		
Chlorobenzene					99	3.77	58	3.84
Tetrachloro- ethylene	66	3.08			224	8.52		
Toluene					16	.61		
Dichloroethylene					11	.42		
Trichloroethylene	380	14.39			21	.8		
Vinyl Chloride	10	.47			12	.46		
Bis (2-Ethyl Hexyl) Phthalate					20	.93		
1,2-Dichloro- benzene							10	.66
1,3-Dichbro- benzene							10	.66
Dimethyl Phthalate					14	.53		
Di-N-Butyl Phthalate					11	.42		
Napthalene					10	.38		
1,2,3-Trichloro- benzene					10	.38		



D. Olin Corporation, Nigara Falls  
NY 0001635  
SIC 2812

This inorganic chemicals facility manufactures caustic soda and chlorine. Its 1st-round permit, which expired June 30, 1981, limited mercury mass loadings to 0.1 lb/day (average) and lead to 4.5 lbs/day (average). It also required monitoring of total volatile organics, monochlorobenzene, dichlorobenzene, trichloroethylene, and tetrachloroethane.

The facility's renewal application form 2C, received by DEC on August 20, 1980, indicates that the discharge contains significant amounts of priority pollutants (see Table 4, page 16). In particular, the facility contributes 77 lbs/day of tetrachloethylene, 50 lbs/day of dichloroethylene, and 103 lbs/day of trichloroethylene. All of these compounds are potential carcinogens in humans.

TABLE 4

OLIN (NY0001635) 2C EFFLUENT TESTING

Chemical	Outfall					
	002		004		005	
	ppb	lbs/day	ppb	lbs/day	ppb	lbs/day
Mercury	3.2	.070	6	.096	14.5	.230
Nickel			150	3.0		
Zinc	108	2.76	120	1.98	123	2.64
Phenols	10	.23	163	2.54	94	1.028
Benzene			11	.231		
Carbon Tetra- chloride			13	.274	50	.818
Chlorobenzene			18	.366		
Chloroform			100	2.04	207	3.39
Methylene Chloride	79	1.425	14	.244	238	3.99
Tetrachloro- ethane			502	10.6	423	4.63
Tetrachloro- ethylene	2498	57.5	726	15.3	398	4.35
Toluene			13	.273		
Dichloroethylene	1906	43.9			519	5.68
Trichloroethane	42	.968	22	.44	13	.142
Trichloro- ethylene	2553	58.8	1661	35.0	826	9.04
Vinyl Chloride	89	2.05	18	.38	23	.25
Bis (2-Ethyl Hexyl) Phthalate	15	.345			10	.164
Di-N-Octyl Phthalate			97	1.69	13	.211
Trichloro- benzene	31	.626				

E. Hanna Furnace, Buffalo  
NY0001597  
SIC Code 3621

This facility manufactures pig iron by use of blast furnaces. It is currently operating under the conditions of its old permit, which expired September 30, 1980. The permit contains limitations for cyanide (30 lbs/day average, 90 lbs/day maximum) and phenols (1.72 lbs/day ave., 5.2 lbs/day maximum).

The firm's 2C application form, received by DEC on April 23, 1981, indicates that these levels are not being achieved. The results of this testing are presented in Table 5.

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TABLE 5

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HANNA FURNACE 2C EFFLUENT TESTING

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<u>Pollutant</u>	<u>Discharge 001</u>
Lead	55.5 ug/l, 17.86 lbs/day
Mercury	3.0 ug/l, .97 lbs/day
Zinc	140 ug/l, 45.05 lbs/day
Cyanide	270 ug/l, 86.87 lbs/day
Phenols	68 ug/l, 21.88 lbs/day

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The cyanide and phenols mass loadings appearing in these results exceed the average permit limits by three and thirteen times respectively. Also, the substantial amounts of lead and zinc discharged are not addressed by the permit. These effluent testing results, if indicative of common discharge quantities, should have important implications for the upcoming draft BAT permit. They reveal the need for additional waste treatment as well as new limits on lead, mercury and zinc.

2. Currently Effective Permits

- A. Carborundum Co., Niagara Falls  
NY0001376  
SIC Code 3291

This facility's major activity is the production of abrasives. Its process wastewaters are discharged to the City of Niagara Falls Wastewater Treatment Plant, and approximately 4 MGD of cooling water are discharged to the Niagara River.

The firm applied for a permit renewal on October 1, 1979, using the old Application Form C. This form does not require comprehensive testing of the plant's effluent. The facility's Industrial Chemical Survey (ICS), however, contains important information on priority pollutants. According to this ICS dated May 1, 1979, the plant uses 14,400 lbs/year of methylene chloride, 185,000 lbs/year of trichloroethylene, and 700 lbs/year of toluene.

Without specific effluent monitoring apparently available, DEC issued the facility a 5-year permit on June 1, 1980. While the permit contains no toxics limits, it does require that a high intensity monitoring program be completed for methylene chloride, trichloroethylene, and total phenols. The permit also prohibits any process waste discharge to the Niagara River.

Since the permit extends beyond the July 1, 1984 BAT deadline, it will be necessary to evaluate the extent of

cooling water contamination by priority pollutants. The monitoring program is a first step in this direction. If it indicates that effluent contamination is in fact occurring, further tests should be conducted to characterize the toxicity of the discharge. This would include monitoring to detect the presence of other priority pollutants. Such monitoring should eventually lead to the setting of effluent limits if toxics are detected by the monitoring program.

B. FMC Corporation, Tonawanda  
NY000337  
SIC Code 2819

This plant manufactures perborates, persulfates, peracetic acid and zinc and calcium peroxide. The renewal application form 2C was filed March 4, 1981. It characterizes the discharge as 8 MGD, .15 MGD of which is process water. The effluent testing results found zinc present at a concentration of .08 mg/l (4.4 lbs/day), and methylene chloride present at 70 ppb (4.06 lbs/day).

While these were the only priority pollutants detected, a previous renewal application (received by DEC September 29, 1980) indicated that chromium, lead, nickel, phenols, zinc, chlorotoluene, and trichlorethane could be present in the discharge.

The facility was issued a 5-year permit effective March 1, 1981. While the permit contains no specific toxics limitations, it does require that a short-term monitoring program be completed for lead and phenols. This report has

since been submitted, and found no net increase of these substances in the discharge.

As a permit that must meet BAT standards, however, there exist noticeable deficiencies. The detection of zinc and methylene chloride by the effluent testing is not addressed. Nor is the possible presence of other heavy metals, chlorotoluene, and trichloroethane explored. Further investigation is necessary to assure that these priority pollutants are not discharged to the Niagara River.

C. SCA Chemical Services, Inc., Lewiston  
NY0072061  
SIC Code 4953

SCA Model City facility treats, recovers, and disposes of numerous hazardous and industrial wastes, both solid and liquid. The facility's capabilities include solvent and fuel recovery, bulk transfer, research laboratory analysis, chemical oxidation and reduction, aqueous detoxification, neutralization, secured scientific landfilling, and collection and hauling of chemical wastes. The end product of treatment of wastes received by the facility, leachate from on-site landfills, and wastes from on-site recovery processes contribute to SCA's effluent.

In 1978, SCA requested modifications of its discharge permit requirements consisting of raising or eliminating a number of limits and by replacing some limits with monitoring. SCA based these requests on the arguments that it could process and discharge its waste more quickly, that more

waste could be processed, and that levels of pollutants higher than listed in the permit were not toxic to fish. Although the proposed modifications are still in the draft stage, DEC has proposed to grant some changes, deny others, and grant still more with modifications. DEC has proposed to deny all five requested changes involving priority pollutants.

Table 6 summarizes the situation.

TABLE 6

SCA PERMIT DISCHARGE LIMITS, DAILY LOADING & PROPOSED MODIFICATIONS

<u>Priority Pollutant</u>	<u>Permit Discharge Limit (mg/l)</u>	<u>SCA's Proposed Modification</u>	<u>DEC's Proposed Modification</u>
Antimony	0.5	0.5 mg/l	0.5 mg/l
Arsenic	0.1		
Beryllium	1.0		
Cadmium	0.2		
Chromium, Total	1.0		
Chromium, Hexavalent	0.1		
Copper	0.4	0.8 mg/l	0.4 mg/l
Lead	0.2		
Mercury	0.002		
Nickel	2.0	5.0 mg/l	2.0 mg/l
Selenium	0.1		
Silver	0.1	Monitor	0.1 mg/l
Thallium	3.25	Eliminate	3.25 mg/l
Zinc	1.0		
Cyanide, Free	0.1		
Cyanide, Total	0.8		
Phenol	1.0		
Halogenated Hydrocarbons, Total	0.025		
PCB	0.001		
Benzidine	0.0002		
Toluene	0.5		
Phthalate Esters	0.16		

Since SCA is a waste treatment and disposal facility, it seems reasonable to anticipate that the wastes it receives contain many of the priority pollutants. Its present discharge permit, however, lists only metals and a few of the other priority pollutants, of which three are the general categories of halogenated hydrocarbons, PCBs, and phthalate esters.

The permit contains numerous implicit and explicit conditions which mitigate the absence of specific toxic effluent limitations. First, the total halogenated hydrocarbon limit is stringent. Assuming an average flow of 1.0 MGD, the 25 ppb concentration limit would yield .108 lbs/day. This level is especially miniscule when compared to the Hooker discharge limit of 284.0 lbs/day.

Second, the waste treatment system, which includes oxidation, reduction, neutralization, chemical precipitation, carbon adsorption, and biological treatment, appear to meet BAP standards.

Third, the narrative permit conditions add an important level of protection. They limit discharge flows, assure that enough dilution of the discharge is available, require periodic inspection of pipeline design, require extensive bio-assays and chemical analysis of effluent prior to discharge, and allow the Town of Porter to conduct independent sampling of the discharge. A re-opener clause is also present, allowing new monitoring conditions or effluent limits to be added to the permit. All of these stipulations enhance effective control over this toxic discharge.



D. Union Carbide, Niagara Falls  
NY0000060  
SIC Code 3313

This facility manufactures welding flux by melting various metal oxides in electric furnaces. The process contributes 150,000 GPD of treated furnace scrubber water and 1.5 MGD of non-contact cooling water to the Niagara River. The firm's 2C renewal application form was received by DEC on January 12th, 1981. It listed the following chemical concentrations as present in the discharge:

Chromium	.02 mg/l; .19 lbs/day
Copper	.018 mg/l; .17 lbs/day
Zinc	.03 mg/l; .28 lbs/day

Union Carbide analyzed its effluent for metals only. According to the application instructions (45 FR 33563, May 19, 1980), however, the company must also sample for volatile, acid, and base/neutral compounds. This omission was apparently overlooked by DEC.

The facility was issued a 5-year permit, effective August 1, 1981. The permit contains no limits on priority pollutants, but does require monitoring for lead and oil and grease. Under the circumstances, however, it is not possible to tell if other toxic chemicals contaminate the discharge. The facility should be required to re-submit the completed application form as a first step toward toxic characterization of the discharge.

E. Buffalo Color Corp., Buffalo  
NY0002470  
SIC Code 2841

This dye and pigment manufacturing plant discharges 15 MGD of non-contact cooling water to the Buffalo River, while its process wastes are sent to the Buffalo Sewer Authority. This facility filed the old application Standard Form C and was therefore not required to analyze its effluent for the priority pollutants. Their application, filed September 19, 1980, did list chromium, cyanide, zinc, and dichlorobenzene as possible components of the discharge.

In the absence of effluent testing, the facility's ICS form provides important information on possible toxic substances in the discharge. The following priority pollutants are used at the plant:

Chlorobenzene	18,000 lbs (average annual use)
Dichlorobenzene	140,000 lbs (average annual use)
Chlorophenol	5,000 lbs (average annual use)
Toluene	8,000 lbs (average annual use)
Formaldehyde	5,000,000 lbs (average annual use)
PCB	20,494 lbs (amount now on hand)

The facility's SPDES permit, effective May 1, 1981, contains no toxics limitations, nor does it contain any monitoring requirements that would investigate the possibility of chemical contamination of the cooling water discharge. At a minimum, the permit should be based on a characterization of the toxic potential of the effluent, especially since the permit extends beyond the July 1, 1984 BAT deadline. No such characterization has occurred to our knowledge. Analyzing

the effluent for the substances listed on the ICS as well as the remaining priority pollutants would be a logical step toward a toxics evaluation of the discharge.

F. Westinghouse Electric, Buffalo  
NY0001210  
SIC Code 3621

This facility manufactures electric motors, speed reducers, and electric controls, and discharges 0.5 MGD. Most of this water is used for non-contact cooling purposes, especially since the plant's electroplating process was eliminated.

Despite this change in plant operations, small quantities of priority pollutants were still detected by the effluent testing performed for the 2C application form, which was completed February 13, 1981.

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TABLE 7

WESTINGHOUSE 2C EFFLUENT TESTING

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	<u>ppb</u>	<u>lbs/day</u>
Arsenic	9.	.011
Cadmium	18.5	.023
Copper	14.4	.019
Lead	5.9	.007
Zinc	294.	.443
Chloroform	11.	.016
Benzene	5.	.007
Tetrachloroethylene	5.	.007
Trichloroethylene	68.	.0272
Methylene Chloride	7.	.003
Toluene	11.	.004
Trichloroethane	12.	.0048
1,3-Dichlorobenzene	5.	.002
1,4-Dichlorobenzene	10.	.004
Di-N-Butyl Phthalate	15.	.006
Hexachlorobutadiene	19.	.007

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The facility's ICS supplements the effluent data, and is presented in Table 8.

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TABLE 8

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WESTINGHOUSE INDUSTRIAL CHEMICAL SURVEY

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	<u>Average Annual Usage</u>
Trichloroethane	14,684 gallons/yr
Methylene Chloride	1,485 gallons/yr
Toluene	16,273 gallons/yr
Xylene	14,092 gallons/yr
Asbestos	4,590 pounds/yr
Freon	9,290 pounds/yr
Phenolic Alkyd Varnish	28,036 gallons/yr
Epoxides	282,558 pounds/yr

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By requiring monitoring for trichlorethane, trichloroethylene, freon, and toluene, the new permit (effective July 1, 1981) makes a real beginning toward the assessment of the toxic potential of the discharge. The ICS and 2C effluent testing indicate, however, that a large number of compounds may be contributing to the toxic nature of the discharge. If this is indeed the case, monitoring for only a few of these chemicals may not be very helpful. The performance of bioassays, on the other hand, could provide useful information concerning the cumulative effects of these compounds.

Biomonitoring has been rarely employed by DEC. This profile points up that fact, as only one permit (SCA) has conditions requiring the performance of bioassays. While they do not implicate specific substances as toxic, bioassays can at least answer the question, "Is this discharge potentially harmful to the environment?" In cases where specific pollutant

testing is not useful or infeasible, bioassays can be a helpful tool for toxic discharge assessment, and could be usefully employed in the Westinghouse case.

### III. DRAFT PERMITS

- A. Allied Chemical Corporation, Tonawanda  
NY0001481  
SIC Code 2821

This polyethylene manufacturer discharges 5 MGD to the Niagara River, 12,000 GPD of which is process water. 30,000 GPD of process water is sent to the municipal treatment system. Both the 2C priority pollutant testing and an EPA priority pollutant study conducted May 6-8, 1980, found none of these substances above detectable levels.

The proposed draft permit does not contain any effluent limits or monitoring requirements for priority pollutants, nor does the effluent testing to date warrant such requirements. While the direct discharge does not appear to present a toxics problem, the process discharge to the POTW could contain priority pollutants.

- B. Dresser Industries, DEPEW  
NY0001996  
SIC Code 3323

This steel foundry discharges .08 MGD of process wastes. This discharge was tested for the presence of priority pollutants in the facility's 2C application form. The following substances were detected:

Copper	12 ppb; .011 lbs/day
Zinc	12 ppb; .011 lbs/day
Chloroform	5 ppb; .062 lbs/day
Methylene Chloride	18 ppb; .0172 lbs/day
di-ethyl-hexyl Phthalate	3 ppb; .0029 lbs/day

The proposed draft SPDES permit does not address the presence of the organics or phthalate esthers, but does set limits on cyanide, phenols, chromium, lead, and zinc. Since organic pollutants are present at small concentrations, their impact on water quality should be considered.

V. PRETREATMENT IN THE NIAGARA RIVER BASIN

1. Rationale for Pretreatment

While direct industrial dischargers are regulated through the NPDES permitting program, or SPDES as delegated to New York State, indirect dischargers, whose effluent enters the sewerage system, are generally not subject to discharge controls except those instituted by the municipal sewer authority.

Regulation of these indirect industrial dischargers has been recognized as a necessary element in the overall national goal of clean waters, as established by the Federal Water Pollution Control Amendments of 1972 and the Clean Water Act of 1977. A review of the problem of indirect discharges into the Niagara River provides a good case study demonstrating the need for pretreatment.

In general, the flow of untreated industrial wastes is considered to cause three significant problems known as pass through, disruption, and sludge contamination.

A. Pass Through

The treatment processes employed by the Publicly Owned Treatment Works (POTWs) in the Niagara Basin are designed to treat conventional pollutants such as suspended solids and of non-toxic wastes.

Of the six POTWs in the Niagara River Basin receiving significant amounts of toxic industrial wastes, five are designed to provide the equivalent of secondary waste

treatment. The sixth, the Niagara Falls facility, was equipped with an advanced tertiary waste treatment process which broke down almost immediately. As a result, all industrial wastes entering the facility have received only primary treatment for the past two years.

Secondary treatment provides only partial removal of toxic pollutants: primary treatment provides even less. In 1980, EPA published the Fate of Priority Pollutants In Publicly Owned Treatment Works (October, 1980), the result of a nationwide survey of 20 POTW's. The report indicates that 50% of secondary treatment plants studied achieved at least a 76% reduction of total priority pollutant metals, 85% reduction of total volatile priority pollutants and 70% reduction of total acid-based neutral priority pollutants. Table 9 (page 31) excerpted from the reports summarizes percent removals achieved by the secondary treatment processes of the 20 POTWs. Note that for some pollutants such as trichloroethylene, the median removal rate was quite high, while for others such as nickel, mercury and lead, removal percentages were quite low. One can therefore conclude that significant amounts of priority pollutants are now entering the Niagara River and its tributaries from the six POTWs known to be receiving large volumes of industrial wastes.



TABLE 9

## SUMMARY OF PERCENT REMOVALS ACHIEVED BY SECONDARY TREATMENT

Parameter	Influents > 0 µg/l					Influents ≥ 10 µg/l		
	Percent of Plants							
	50	75	80	90	Percent Removal			
	N	Median				N	Median	
BOD	20	91	83	83	79	91	20	91
TSS	20	91	87	84	74	92	20	92
COD	20	82	76	71	62	83	20	83
Total Phenols	20	77	46	45	40	77	20	77
TOC	20	71	62	61	59	71	20	71
1,1,1 Trichloroethane	18	85	82	69	38	86	16	88
Ethylbenzene	19	81	70	50	0	81	12	89
Methylene Chloride	20	54	31	27	0	55	16	55
Bis (2-Ethylhexyl) Phthalate	20	53	33	33	0	53	18	60
Tetrachloroethylene	20	80	50	25	0	82	15	86
Toluene	20	90	67	57	25	92	17	94
Trichloroethylene	20	85	71	50	0	86	16	90
Chromium	19	71	67	64	44	73	19	75
Copper	20	81	68	64	59	82	20	82
Cyanide	20	53	0	0	0	54	20	54
Lead	18	52	0	0	0	53	18	55
Mercury	17	55	0	0	0	55	17	55
Nickel	19	32	17	9	0	32	18	32
Silver	20	71	50	43	0	73	10	81
Zinc	20	78	66	65	55	80	20	80

Notes: Plant averages used as basis for percent removal calculation.

N - Number of data points included.

Values reported below their detection limit were averaged as 0 in influents, and as the detection limit in effluents.

B. Disruption

Just as toxic pollutants can pass through secondary treatment with only minimal treatment, they can also disrupt the treatment process of the plant. Cyanide, for example, will kill the micro-organisms that break down conventional sewage in the biological treatment process. This can then overload the treatment system with the suspended solids and other organics which normally would have been broken down by the micro-organisms.

In one instance, a discharge of industrial HCP (hexachlorocyclopentadiene) completely shut down the Louisville, Kentucky sewage treatment plant. (Administration Testimony at House Hearings, Sept. 16, 1977, a Legislative History of the Clean Water Act of 1977, Serial No. 95-14, 95th Congress, 2nd Session 1432 [1978]). In another instance, Louisville also experienced a series of underground explosions on February 13, 1981 caused by a discharge of hexane into the city's sewer system. Four people were injured, damage to surrounding private property was estimated to exceed \$10 million; and damage to the plant itself was "inestimable." Although these represent isolated incidents, the problem of interference of toxic pollutants with treatment processes remains a significant one.

### C. Sludge Contamination

The final significant problem is that industrial influent to POTWs can complicate the problem of safe sludge disposal. In the EPA POTW study referred to earlier, 76 toxic pollutants were detected in raw sewage samples. Twelve of the most frequently occurring and most highly concentrated were heavy metals.

POTWs generally dispose of sludge in one of four ways: land application, landfilling, incineration and ocean dumping. Land application permits heavy metals to be taken up by plants and food crops. Land application and landfilling can also lead to the leaching of heavy metals into groundwater which supplies 50% of the drinking water in this country. Incineration will vaporize such toxics as mercury but comprehensive testing to determine the air pollution impacts of sludge incineration remains to be done. Ocean dumping can contaminate the marine environment. Table 10 (pages 34-36) details the occurrence of priority pollutants in raw sludge samples.

Pretreatment to remove toxics from the sludge of POTWs in the Niagara Basin will not significantly alter sludge disposal practices in the basin in the near future. An engineer in DEC's Water Quality Program for Region 9 estimated that 85% of the sludge from POTWs is presently disposed of in landfills. The City of Niagara Falls Sewage Treatment Plant for example, presently produces 220 tons of sludge per day, all of which is disposed of at the

OCCURRENCE OF PRIORITY POLLUTANTS  
IN POTW RAW SLUDGE SAMPLES

PARAMETER	NUMBER OF SAMPLES ANALYZED	PERCENT OF TIMES DETECTED	UNITS	MINIMUM(1)	MAXIMUM
1,2-BENZANTHRACENE	203	26	UG/L	9	1500
CHRYSENE	202	25	UG/L	9	1500
VINYL CHLORIDE	204	19	UG/L	8	62000
1,1,1-TRICHLOROETHANE	205	18	UG/L	1	1900
1,1,2,2-TETRACHLOROETHANE	203	16	UG/L	1	1044
CHLOROBENZENE	205	15	UG/L	1	290
CHLOROFORM	205	15	UG/L	1	40
THALLIUM	200	14	UG/L	1	31
1,2-DICHLOROPROPANE	204	13	UG/L	1	103
1,4-DICHLOROBENZENE	203	12	UG/L	34	12000
DICHLOROBROMOMETHANE	205	12	UG/L	7	260
1,2-DICHLOROBENZENE	203	10	UG/L	20	1319
TRICHLOROFLUOROMETHANE	205	10	UG/L	2	113
CHLOROETHANE	205	9	UG/L	5	71000
METHYL CHLORIDE	205	9	UG/L	10	6100
1,2,4-TRICHLOROBENZENE	203	8	UG/L	38	950
PENTACHLOROPHENOL	203	8	UG/L	10	6000
DICHLORODIFLUOROMETHANE	205	8	UG/L	7	4300
1,3-DICHLOROBENZENE	203	7	UG/L	38	1900
FLUORENE	203	7	UG/L	31	1300
DIETHYL PHTHALATE	203	7	UG/L	27	786
3,4-BENZOFLUORANTHENE	203	6	UG/L	2	2400
1,1-DICHLOROETHYLENE	205	5	UG/L	1	14000
METHYL BROMIDE	200	5	UG/L	33	30000
CHLORODIBROMOMETHANE	204	5	UG/L	10	75
2,4-DICHLOROPHENOL	203	4	UG/L	14	298
CARBON TETRACHLORIDE	205	4	UG/L	5	940
ACENAPHTHENE	203	3	UG/L	6	4600
DI-N-OCTYL PHTHALATE	203	3	UG/L	37	1024

OCCURRENCE OF PRIORITY POLLUTANTS  
IN POTW RAW SLUDGE SAMPLES

PARAMETER -----	NUMBER OF SAMPLES ANALYZED -----	PERCENT OF TIMES DETECTED -----	UNITS -----	MINIMUM(1) -----	MAXIMUM -----
2-CHLOROPHENOL	203	3	UG/L	11	72
1,1,2-TRICHLOROETHANE	203	3	UG/L	1	2100
11,12-BENZOFLUORANTHENE	204	3	UG/L	40	140
DIMETHYL PHTHALATE	203	2	UG/L	29	650
HEXACHLOROBENZENE	203	2	UG/L	28	780
ACRYLONITRILE	205	2	UG/L	20	290
1,2-DICHLOROETHANE	205	1	UG/L	1	1
BENZO (A)PYRENE	203	1	UG/L	302	490
2,4,6-TRICHLOROPHENOL	203	1	UG/L	11	16
HEXACHLOROBUTADIENE	203	<1	UG/L	2700	2700
2-CHLORONAPHTHALENE	203	<1	UG/L	1600	1600
ACENAPHTHYLENE	203	<1	UG/L	610	610
1,12-BENZOPERYLENE	203	<1	UG/L	130	130
1,2:5,6-DIBENZANTHRACENE	203	<1	UG/L	50	50
INDENO(1,2,3-C,D) PYRENE	203	<1	UG/L	40	40
4,4'-DDE	205	<1	NG/L	10000	10000
1,3-DICHLOROPROPYLENE	205	<1	UG/L	19	19

(1) MINIMUM OF VALUES ABOVE DETECTION LIMIT ONLY  
PRELIMINARY DATA ONLY-TO BE VERIFIED

OCCURRENCE OF PRIORITY POLLUTANTS  
IN POTW RAW SLUDGE SAMPLES

PARAMETER	NUMBER OF SAMPLES ANALYZED	PERCENT OF TIMES DETECTED	UNITS	MINIMUM(1)	MAXIMUM
CYANIDE	200	98	UG/L	60	245000
COPPER	200	98	UG/L	100	180000
ZINC	201	98	UG/L	410	1100000
CADMIUM	200	98	UG/L	12	95000
SILVER	200	97	UG/L	15	6450
CHROMIUM	200	96	UG/L	110	160000
NICKEL	200	95	UG/L	12	84000
TOLUENE	203	95	UG/L	1	42300
LEAD	201	95	UG/L	80	170000
BIS(2-ETHYLHEXYL) PHTHALATE	203	95	UG/L	20	35000
ARSENIC	202	94	UG/L	5	6000
ANTIMONY	193	89	UG/L	3	2000
SELENIUM	194	80	UG/L	5	140000
MERCURY	199	78	NG/L	110	690000
ETHYLBENZENE	205	73	UG/L	1	4200
BENZENE	205	69	UG/L	1	694
METHYLENE CHLORIDE	205	63	UG/L	1	3308
1,2-TRANS-DICHLOROETHYLENE	205	62	UG/L	1	96000
ANTHRACENE	203	53	UG/L	6	3200
PHENANTHRENE	203	53	UG/L	6	3200
PHENOL	203	52	UG/L	19	17000
TRICHLOROETHYLENE	201	50	UG/L	1	4690
PYRENE	203	46	UG/L	6	1700
DI-N-BUTYL PHTHALATE	203	45	UG/L	14	1600
BUTYL BENZYL PHTHALATE	203	42	UG/L	4	45000
1,1-DICHLOROETHANE	205	42	UG/L	1	2885
TETRACHLOROETHYLENE	205	37	UG/L	1	2800
FLUORANTHENE	203	34	UG/L	8	1200
NAPHTHALENE	203	33	UG/L	11	5200
BERYLLIUM	202	32	UG/L	2	65

Newco Waste landfill. The same DEC engineer acknowledged that "trace amounts" of many toxic substances have been detected in the sludge of the Niagara Falls plant and other POTWs (personal communication from Greg Sutton, DEC Engineer in Water Quality Program, Region IX, Dec. 2, 1981). Even with the removal of these trace amounts of toxics, however, it appears that landilling will remain the most cost effective in the near future. We understand from Robert Mitrey of DEC Region 9 that incineration is planned for all of the Buffalo Sewer Authority's sludge (260 tons per day) beginning in early 1982. Land application may be practical only in the predominately rural southern part of Niagara County and ocean dumping is impractical because of the great distances involved.

## 2. The Status of Federal Pretreatment Regulations

To eliminate the problems caused by the flow of toxic substances into municipal POTWs, the federal government has taken two important initiatives. First, Congress passed the Federal Water Pollution Control Act of 1972 and its successor, the Clean Water Act of 1977, which require EPA to develop and implement uniform national pretreatment standards for industries dumping wastes into publicly owned treatment works. As set forth in Section 307(b)(1)d of the Clean Water Act, these standards must address any pollutant which "interferes with, passes through or otherwise is incompatible with such works."

The second initiative was the approval of general pretreatment regulations in 1978 (40 CFR Part 403). These regulations outline the roles which EPA, state and local government, industry and the public will play in the development of a national pretreatment program. They also define deadlines for action, monitoring requirements, procedures for obtaining exceptions to the general rules of EPA's enforcement policy. As designed, the general regulations and the categorical standards together provide the first comprehensive program to regulate the discharge of industrial pollutants into POTWs.

Today, nine years after the passage of the Federal Water Pollution Control Act and three years after the promulgation of the General Pretreatment Regulations, the national pretreatment program is still at best only a promise. Because of the current developments in Washington, it is clear that New York State must exercise its own initiative if effective pretreatment will come to pass in the Niagara River or elsewhere in the state.

EPA has not promulgated the needed uniform categorical pretreatment standards to limit indirect industrial discharges of toxic pollutants although the Clean Water Act of 1977 directed EPA to do so within nine months of passage of the Act. Under the Act, pretreatment standards must be set for 34 categories of industries. These standards are to be analogous to the BAT limits imposed on direct dischargers. To date, EPA has set standards for only one industry,



electroplating, and these standards have been suspended.

The fate of the General Regulations is an indication of the pressure brought by industry to destroy the program. General Pretreatment Regulations were promulgated in 1978 (40 CFR Part 403), the culmination of four years of rulemaking. After successful challenge of these regulations by industry and environmental interests, EPA undertook some 18 months of review and hearings before publishing final General Pretreatment Regulations in January of this year (46 FR 9404 et seq., January 28, 1981).

Industry immediately began a campaign to repeal the Amendments. At the same time, President Reagan issued Executive Order 12291 mandating a regulatory review of all major regulations. To the requests of industry that the Pretreatment Regulations be subject to this review, EPA refused by taking the position that the regulations were minor and should therefore not be suspended for review.

Rebuffed at EPA, the industry intervenors appealed to the Office of Management and Budget to override EPA's decision. Shortly thereafter, EPA reversed its earlier decision. On April 2, 1981, just three days after the new pretreatment regulations had taken effect, EPA suspended the amendments "until further notice." The suspension without any public notice or opportunity for public comment.

EPA took a series of further action of immediate and significant environmental consequence. First, the agency advised the electroplating industry (the only industry with promulgated categorical standards) that the industry could postpone efforts to comply with the applicable categorical pretreatment standards.

Without national pretreatment standards, the only limits on the disposal of these pollutants into POTWs are those devised by the local municipalities themselves. However, municipalities almost always lack the resources needed to examine pollution control technology costs and removal efficiencies. Standards set at the municipal level may lack uniformity, thus subjecting an industry in one municipality to stringent regulation, while a competitor in another municipality faces more lenient regulations.

In addition to suspending the categorical standards for electroplating, EPA also suspended the regulations that required local municipalities to develop, and obtain federal approval of, a pretreatment program before receiving federal funds to construct a sewage treatment plant. EPA's decision permits the waste of construction grant funds, jeopardizing the effectiveness of the national sewage treatment effort. It allows plants to be built without a comprehensive waste survey and thus without knowledge of the amount and quality of industrial influent. Second, EPA's decision encourages

industry to discharge their wastes into POTWs thereby escaping control requirements which would apply if they were to discharge directly into receiving waters.

3. Pretreatment on the Niagara River

The large number of industries concentrated on the Niagara River and the large amounts of toxic pollutants these industries produce, together contribute to what is one of the most serious water pollution problems in New York State. We have already identified the inadequacy of the permits governing direct discharges as one source of the toxic pollution problem. Another principal cause is the lack of comprehensive pretreatment programs in the Niagara. Because of this failure to develop a program, significant amounts of industrial wastes are now receiving only partial treatment before being discharged into the Niagara and its tributaries.

In response to the general pretreatment regulations, the Department of Environmental Conservation is now developing pretreatment programs statewide. DEC has required 44 POTW's with a design flow of over 5 million gallons per day (MGD) as well as 12 smaller POTW's with significant industrial users, to develop pretreatment programs. Since the Niagara Basin has no smaller POTWs that are required to develop pretreatment programs, we will focus our attention on the development of programs for the POTWs with flows greater than 5 MGD.

A recent (12/1/80) DEC printout of all the POTW's in New York State, lists thirty plants which discharge into either the main stem of the Niagara River, or into the Niagara's tributaries, Tonawanda Creek and the Buffalo River. Of the thirty POTWs, DEC has required six to conduct pretreatment programs.

The status of pretreatment programs in the Niagara Basin closely parallels the status of pretreatment programs statewide. The Buffalo Sewer Authority is one of the farthest along in terms of pretreatment and program development while the Niagara Country POTW (Sewer District I) has been one of the most recalcitrant in the state. Thus far statewide, all forty-four POTWs have completed and submitted plans of study, the initial step in developing a pretreatment program, and the prerequisite for a Step I construction grant from EPA as authorized by Section 201 of the Clean Water Act. Before a construction grant can be approved, DEC reviews the plan of study to determine its adequacy. Forty-one POTWs have received this DEC approval of their plans of study and have received their construction grants. These grants subsidize all subsequent steps in the development of pretreatment programs including the devising of a public participation work plan, the mailing of industrial waste surveys as well as all monitoring and sampling.

We will now briefly summarize the status of the six pretreatment programs now being conducted in the Niagara River Basin.

Buffalo Sewer Authority (Bird Island, Buffalo, N.Y.). The Buffalo Sewer Authority (BSA) has one of the most advanced pretreatment programs in the state. BSA sent out approximately 1600 industrial waste surveys and has now determined that approximately 180 are significant industrial users (SIU). According to educational materials provided by DEC, the department has defined an SIU to be:

- (1) all industries subject to categorical pretreatment standards;
- (2) industries having substantial impact, either singly or in combination with other contributing industries in the operation of the treatment works;
- (3) manufacturing industries using, on an annual basis, either 10,000 pounds or 1,000 gallons of raw material containing priority pollutants/substances of concern, and discharging a measurable amount of these pollutants into the sewer system from the process using these pollutants;
- (4) those industries discharging more than 5% of the flow or load carried by the treatment plant receiving the waste.

The BSA pretreatment program is scheduled to begin on May 1, 1982. The DEC engineer monitoring the progress of the program has stated that BSA will probably be a month late in starting pretreatment.

North Tonawanda Sewage Treatment Plant (North Tonawanda, New York). North Tonawanda has made reasonably good progress in its pretreatment program. Of the 130 industries to

receive industrial waste surveys, 47 have been designated as significant industrial users.

Poor communication between DEC and the engineering firm conducting the pretreatment program at Tonawanda will cause a 4- to 6-month delay in program development. According to Mary Jane Dzialo who oversees the development of pretreatment programs in the Niagara Basin at DEC, the engineering firm did not realize that DEC requires all pretreatment programs to request industrial self monitoring from all industries designated as significant industrial users. This monitoring verifies the exact nature and volume of the industrial effluent so that the POTW can discover which industries are contributing what pollutants. This particular engineering firm has its headquarters in Michigan where it does most of its pretreatment work. Michigan does not require industrial self-monitoring, which explains the engineers' confusion.

This regrettable delay means that the North Tonawanda Sewage Treatment Plant will miss its August 1982 deadline for beginning actual pretreatment by up to half a year.

Town of Tonawanda Sewage Treatment Plant (Tonawanda, New York). The Town of Tonawanda POTW has fallen behind in its pretreatment program. Municipalities have the option of hiring outside consulting engineers (for which construction grant funds will pay 75%, the State 12.5% and the municipality 12.5%) or using the engineer of the municipality. Most towns hire outside engineers to develop POTW pretreatment

programs. Tonawanda chose to use its own engineer.

The town engineer drew up a plan of study which DEC found unsatisfactory. DEC then worked with the engineer to fashion a POS acceptable to DEC. The construction grant has been approved and was accepted by Tonawanda on October 19. Dec is now reviewing Tonawanda's industrial waste survey. Once this is approved, POTW can send out the IWS and determine SIU's. No compliance date for the completion of the Tonawanda pretreatment program has yet been set, but pretreatment will not begin until early 1983 at the earliest.

Amherst Sewer District 16 (Amherst, New York). Amherst Sewer District 16 accepted the construction grant in January 1981 but has made little progress since then. A dispute over the grant to hire the consulting engineers has held up the pretreatment program. DEC finally approved the contract in September 1981. Since then, Amherst has sent out its industrial waste survey. Amherst has not determined the number of SIUs but its service area has a very low concentration of industry. In all probability, only Garry Laboratories, a manufacturer of cleaners, lubricants and fluids for cars, will be a SIU. The absence of pretreatment at Amherst does not pose as serious a threat to water quality as it does for other POTWs in the basin.

Niagara County Sewer District I (Wheatfield, NY). The pretreatment program of Niagara County SDI has one of the three poorest records in New York State. Niagara County

has yet to complete even the first step of its pretreatment program because DEC has not yet approved its plan of study.

As at the Town of Tonawanda POTW, the municipality's own engineer is running the program. DEC notified Niagara that it would need to develop a pretreatment program in January of 1980. According to Mary Jane Dzialo, the engineer resisted because he disputed the need for such a program. He has claimed that although the design flow of the Niagara County POTW is 14 MGD (and therefore the POTW has been required to develop pretreatment as a POTW with a flow over 5 MGD), actual flow is only 2.5 MGD.

DEC maintains that several industries are scheduled to go on-line to this facility. The combined flow of these new contributions will amount to more than 2.5 MGD. When added to the actual flow of 2.5 MGD, the new actual flow of the POTW will exceed 5 MGD and therefore require pretreatment.

The NYPIRG analysis indicates that several users of toxic chemicals will discharge their wastes to the Niagara County POTW. It is therefore imperative that a pretreatment program begin as quickly as possible to determine the nature of indirect discharges, since the program is already six months to a year behind schedule in its development.

Since Niagara is a new POTW, it continues to receive construction grant funds. DEC should consider making the approval of further grants contingent upon the prompt development of a public participation workplan and an industrial waste survey by the Niagara POTW.



City of Niagara Falls Wastewater Treatment Plant

(Niagara Falls, New York). When the City of Niagara Falls Treatment Plant began operation in early 1977, it was hailed as one of the most advanced treatment systems in the state. Its treatment provided the equivalent of tertiary treatment using screening, flocculations, sedimentation and carbon filtration. Unhappily, the Niagara Falls Plant has yet to fulfill its early promise.

In 1978, the carbon filtration system broke down. Lawsuits are now in progress to determine whether the breakdown was caused by a structural failure or a construction error. The outcome of the lawsuit will determine who will assume the financial responsibility for repairs. In the meantime the water quality of the Niagara will continue to deteriorate in part because of pollutants discharged from this facility.

According to the Director of Utilities for the City of Niagara Falls, Robert Matthews, 28 industries are on-line contributors to the POTW. Seventeen of these use, store, handle or dispose of toxic organic chemicals, and are thus potential significant industrial users.

When the carbon beds broke down in 1978, the entire secondary treatment capacity of the POTW broke down with them. As a result, all the wastewater flowing into the plant in the last two years has received only primary treatment. At best, primary treatment removes only a

fraction of the toxic chemicals from the POTW effluent. The rest enters the Niagara untreated. To make matters worse, Mr. Matthews has estimated that this deplorable situation will continue for at least another two and a half years, when the repairs of the carbon filtration system are scheduled for completion.

The pretreatment program for the Niagara plant has suffered a host of similar problems. A plan of study was submitted to DEC and approved in March 1980. A construction grant application of \$199,000 was also submitted at that time. Then the City submitted a new grant application of \$389,000, double the original request. This new application included plans both to hire additional engineering consultants and to conduct more extensive sampling of the sewage influent. DEC balked on this second application. Finally, after months of negotiation, and 20 months after the original plan of study had been approved, the Niagara Falls POTW received a grant of \$330,000 to conduct its pretreatment program.

Included in this grant is \$3,200 for the city to purchase several pilot carbon bed units specifically for the pretreatment program. The DEC supervisor of pretreatment in the Niagara Basin told NRDC that the Niagara Falls Plant will run representative samples of the POTW's influent through the pilot carbon beds to determine how efficiently the carbon system removes the toxics. Once the POTW has

determined its significant industrial users and conducted sampling of their effluents, it can then use the pilot carbon bed studies to set pretreatment limits for the industries discharging into its system.

By purchasing these pilot systems, the POTW will not have to wait for the repair of the main carbon filtration system to begin its pretreatment program. In fact, pretreatment will in all probability begin long before the repairs on the carbon beds are completed.

VI. CITIZEN PARTICIPATION IN SPDES AND PRETREATMENT

I. Monitoring of SPDES Permits

While clean-up on the Niagara and elsewhere in New York State may be hampered by lagging regulatory efforts at the federal level, New York State has the authority and the resources to carry out needed improvements in the control of direct and indirect industrial wastewater discharges.

Under Section 402(a)(1) of the Clean Water Act, permits normally requiring BAT controls can be written in the absence of promulgated BAT guidelines, and will be based on Best Professional Judgement (BPJ) as to what constitutes the best available technology economically achievable.

It is our understanding from Tony Adamczyk that DEC is undertaking to write BPJ permits for some 267 principal industrial dischargers during the next six or so months. We have had the opportunity to review early examples of BPJ permits and are encouraged that the department is attempting to achieve significant improvements in toxic controls. Since these permits are based on engineering judgement instead of promulgated federal guidelines, however, it is important that members of the public concerned with the control of toxic discharges monitor the permit process and provide public support for stringent permit limitations where environmental and public health are at stake.

To help in the development of effective public participation in the SPDES permit process, the Natural Resources Defense Council

has established a citizen training program that will provide concerned individuals and groups with technical, regulatory and research skills needed for productive involvement in the SPDES permitting process.

We are pleased to be announcing this new program publicly for the first time at today's session, where we feel that the need for such a program will be well appreciated.

Our New York office will have the equivalent of four full-time staff positions devoted entirely to this training project during the next year. Our New York program is one of many established by NRDC in various states where we hope to assure that so-called "second round permits," required to address toxic substances under federal law, will achieve the necessary controls. During the next six to 12 months in New York State, we believe this crucial second round permitting will be completed. We invite the members of this legislative panel to join in our effort to arouse public awareness and increase the effectiveness of citizens who wish to become involved in this second round permitting process.

Our education program will include:

- ° Instruction on state and federal laws and regulations pertaining to SPDES permits and legally mandated public participation.
- ° Step-by-step training on how to obtain and review SPDES permits; how to understand the cleanup and monitoring requirements contained in the permits; and how to assess wastewater and water quality sampling data for discharges in each trainee's locality.

- ° A comprehensive briefing on regional water quality management plans, problems and mitigation measures available under the SPDES permitting program.
- ° A list of area experts, reference materials and other resources to assist citizens participating in the SPDES program.

We believe that such training will significantly enhance the role of the public in SPDES permitting, and that areas such as the Niagara River Basin will benefit from this training. The write-up and analysis of 13 Niagara River direct dischargers contained in Section IV above, for example, was prepared by Richard Card, our staff permit expert, based on just one day's research in DEC public permit files.

## 2. Participation in Pretreatment Programs

An informed citizen can contribute importantly to industrial pretreatment programs as well as to the regulation of direct industrial dischargers. Our New York training effort will also cover effective public participation in local pretreatment programs. We are fortunate in New York State that active citizen advisory committees are a required element in pretreatment programs, and our initial education will be directed primarily at members of these committees. Our first workshop on pretreatment is scheduled for Saturday January 16th, 1982, sponsored by the Hudson River Sloop Clearwater, Inc., and covering pretreatment programs in DEC's Region 3. Again, we invite the interest and participation of members of this legislative panel. In our pretreatment

training we will help citizens understand basic technical and regulatory issues affecting pretreatment. We will encourage an exchange of views and expertise among advisory committee members from different POTW programs. We will help identify key problems, such as the need for greater public appreciation of the role of pretreatment in cleaning up our waterways, and the importance of waste management planning for sewer sludge and toxic industrial residuals. And we will help committee members work with their POTWs to solve these problems.

As with our SPDES training, we believe that greater public education on the pretreatment program will be a crucial element in its success, especially in the absence of clear federal regulations and guidelines. Robert Blake of our New York staff, who prepared the pretreatment materials contained in Section V above, is in charge of developing the pretreatment training.

## VII. CONCLUSIONS

### 1. SPDES Permits

Part IV of this report has addressed thirteen principal industrial discharges in the Niagara River Basin. While industrial discharge represents only one pathway of toxic pollution to the river, such discharge is also the most quantifiable and amenable to abatement. The Department of Environmental Conservation has made important strides toward the control of these toxic industrial effluents. Of the thirteen dischargers reviewed, eleven had undergone 2C effluent testing for the priority pollutants. The remaining two facilities had at least filed Industrial Chemical Surveys, thus giving DEC a good idea of what could potentially appear in the discharge.

With such information in hand, NRDC has made numerous recommendations that could lead to substantial toxic pollution abatement if carried out in the upcoming round of permit issuance. First, the Hooker and Olin facilities, both located in Niagara Falls, represent the two most detrimental discharges studied in this profile. Stringent effluent limitations on toxic substances coupled with compliance schedules for increased abatement facilities would lead to a substantial decrease in the toxic load to the river.

Second, seven more of the discharges need further monitoring to characterize their toxic potential. These permittees include DuPont, Hanna Furnace, Carborundum,



FMC, Union Carbide, Buffalo Color Corporation, and Dresser Industries. In these cases, specific toxic substances present in the effluents must be reasonably identified before they can be properly limited in SPDES permits.

Third, the DuPont, Hooker, Olin, and Westinghouse discharges should undergo bioassay testing. Each effluent contains a large number of identified toxic pollutants. The synergistic effect of these contaminants could be causing greater hazards than the sum of individual effects would indicate. The bioassay procedure is likely to indicate the toxic potential of the discharge as a whole.

## 2. Pretreatment Conclusions and Recommendations

Large numbers of industries on the Niagara are presently circumventing the treatment of their wastes by discharging into POTWs in the Niagara River Basin. At the six POTWs in the Niagara Basin receiving significant industrial wastes, these wastes are limiting future sludge disposal options; and posing a health risk a present disposal sites; they may be interfering with the treatment processes of the POTWs; and they are apparently entering the waters of the Niagara River, receiving only minimal treatment.

The future of the federal regulations and standards designed to address these problems remains cloudy. EPA has illegally suspended the federal pretreatment regulations and has repeatedly missed its deadline for promulgating

technology-based standards for the major categories of industry that discharge toxic wastes to POTWs.

In the absence of federal guidelines, DEC has the capacity to step into the breach and institute comprehensive and fair pretreatment programs, thereby greatly alleviating the present water quality problems of the Niagara River and its tributaries.

The six POTWs presently receiving significant quantities of industrial wastes have all begun to develop pretreatment programs. Their record is a checkered one, however. Some, such as the Buffalo Sewer Authority, have made good progress in the development of their programs. Others, such as the Niagara County POTW, have become case studies in recalcitrance. None of the pretreatment programs has yet begun to set toxic effluent limits for their on-line industrial contributors.

NRDC recommends that DEC consider withholding construction grants to the Niagara County Sewer District I until this POTW has submitted its industrial waste survey and its public participation plan to DEC.

The other five POTWs have or soon will have compliance schedules which they have agreed to abide by. These schedules set realistic dates for the completion of pretreatment programs in these POTWs, and DEC should make every effort to help these POTWs meet the scheduled requirement dates.

Furthermore, NRDC recommends that, in the absence of federal categorical standards, DEC closely supervise the

setting of strict effluent limits for toxics for industries discharging into POTWs in the Niagara Basin. Engineers setting these effluent limits on behalf of the POTWs should use the water quality criteria developed by EPA as their guidelines and also follow the lead of BPJ permits DEC is now writing.

Finally, NRDC recommends that, in the case of the Niagara Falls Treatment Plant, DEC should work closely with engineers at the plant to ensure through samples of influent passing through the pilot carbon filtration system. If conducted properly, this sampling may obviate the need for further sampling and new limits once the entire carbon filtration system returns to operation.

It is NRDC's belief that these recommendations for comprehensive pretreatment programs in the Niagara Basin will significantly improve the quality of POTW effluent in the Niagara Basin and therefore alleviate the water quality problems of the Niagara River and its tributories.

### 3. Citizen Participation

Today's hearing can be an excellent start in the development of informed citizen participation in SPDES and pretreatment activities affecting the Niagara River. Of course we at NRDC will be pleased to help provide our services in this cause, and we invite the members of this legislative panel to work with us. We are aware that active members of the public are already involved in the pollution control

issues along the Niagara, and we take this opportunity to offer whatever help we can to these dedicated individuals and groups. Although we have suggested today many steps that can be taken by DEC and local municipalities to help in the clean-up effort, we know that sound and lasting solutions can only come as a result of hard and continuing work not only by the regulating agencies, but also by the leaders of Niagara River communities, industry and public interest, and through imaginative efforts such as today's hearing convened by our legislative leaders.

We thank the members of this panel for your time and consideration. We will be pleased to discuss our comments with you and answer any questions you may have.