Water Quality Regulations Hearing

10-03-92

file 1

			-1300	FAX
Nancy Lethcoe		AK Wild + Tour Outdoor Assoc	835-5175	835-4836
Resource Dev. C POB 100516 99510	Refer to coreshed	Anch	276-0700	276-3887
Jack Cottril		Greens Creek	789-4171	789-7112
Steve Borrell 501 W Northern Lights #203 99503		AMA	276-0347	276-7997
Karl Hanneman AK Placer Development		Livengood	452-8685 457-4609(4)	452-8690
George Yaska 122 1st Ave Fairbanks, AK 99701		TCC	452-8251 (3255)	459-3851
Larry Blazing		AFH (Nelchina)	225-6114	225-5920
Edward Cetkan Alaska Pulp Corp. 4600 Sawmill Cr Rd 99835		APC Sitka	747-2225	747-5588
Richard Harris		Sealaska Corp	586-1512	
Alaska Oil + Gas Assoc 99503 121 W. Fireweed Lane Suite 207				
Charlie Boddy			474-8153(4)	
Sally Marqueth				206-553-0165
Larry Blazing		HFA	225-6114	225-5920
Dave Sturdevant		DEC	465-5276	

List of Active consituent groups and agencies

House Resources Committee
October 3 1992

Tape 1 Side 1

Introduction

Testimony
Al Ewing
Q: Rep. Moyer
Q: Davdson
Q: Lincoln
DEC: Dave Stardevant
Q: Finkelstein
to EPA ~~DEC~~
Q: Davidson
John Sandor

Tape 1 Side 2

11:00 John Sandor testimony
0 → 135
136 Q: Leman
A: John Sandor
175 A: Dave Stardevant
220 Q: Leman
306 Q Moyer

TAPE I SIDE I

WAS TAPED OVER BY MATERIAL THAT SHOULD BE ON TAPE 3 SIDE I.

SO The first 30 minutes of the hearing was lost ORDER (I THINK)

TAPE	SIDE	Last 15 min
1	II	
2	I	
2	II	
1	I	First 30 min
3-4	I+II	in order

Cliff: "We may have another hearing in mid November or early December to give people additional opportunity to testify"

Tape 2 Side 1

?

Panel # 1

Jerry McCune - UFA
George Yaska - Tanana Chiefs Conf.
Gershon Cohen - Alask Clean Water Alliance
Mike Wenig - Trustees for Ak
Riki Ott - UFA — copy of tape to CDFU
Tape 2 Side 2 "0" Nancy Lethcoe - Alaska Wild. Rec. + Tourism Assoc.
≈80 Comments by Davidson
95 Edward Oetkin
160 Jack Cottril - Green Creek Mining Environmental Manager
206 Karl Hanneman AK Placer Devel.
speaking for AMA Water Quality Committee
271 Charlie Boddy - Usibelli
Coal Producers
Becky Gay - RDC
410 Tom Van Brocklin Valdez
449 Chris Norris Petersburg Vessel Owner Assn.
Katie Fran?

Tape 3 Side 1

Katie continued
40 Marna Schwartz SEALC Juno
72 Nancy Hillstrand Cook Inlet Vigil
Pioneer Alaska ?
Public Advisory Comm. for the Env
98 Sylvia Ward - No. AK Env. Center
Common Ground

Tape III Side 1

144 Ronald Sparks Haines

025 Q Rick Off

028 " Dave Studevant

072 Jim Zawacki

Tape III Side 2

Q + A

384 Don Mueller Sitka

420 Tim June

Tape 4 Side 1

0 Cheryl Jong Anch

Public comment

↓

Lee Petersburg

Becky Knight "

700 Joe Bridgeman - staff TCEM committee of KCAC

740 Grey Williams - reporter KCHU

Tape 4 Side 2

Sandor committed to look at expanding the H_2O group will ask J. Adair

3:40 p.m.

Alaska State Legislature
HOUSE OF REPRESENTATIVES
COMMITTEE ON RESOURCES

POUCH V
JUNEAU, ALASKA 99811
(907) 465-3715

P R E S S R E L E A S E

Contact: Jay Nelson
561-7617

HEARING ON PROPOSED STATE WATER QUALITY REGULATIONS

A public hearing by the House Resources Committee on revisions to Alaska's Water Quality Regulations as proposed by the Department of Environmental Conservation will be held on Saturday October 3, 1992. The hearing is scheduled from 10:00 a.m. - 1:00 p.m. at the Anchorage Legislative Information Office at 3111 C Street in Anchorage or at any participating Legislative Information Office.

According to Representative Cliff Davidson, chairman of the Committee, the purpose of the hearing will be to review the proposed regulations, determine the impact of the proposed revisions on the economy and the health and welfare of Alaskans and to provide further opportunity for public review and testimony.

Invited to testify are the U.S. Environmental Protection Agency and the Alaska Department of Environmental Conservation. Their overview will be followed by two panels of individuals invited as spokespersons for the major affected industries and public interest groups. Public testimony will follow. Individuals and groups statewide are welcome to participate through the legislative teleconference system.

Alaska State Legislature

HOUSE RESOURCES COMMITTEE

P.O. Box V
State Capitol
Juneau, Alaska 99811
(907) 465-3715

HEARING ON
PROPOSED CHANGES TO STATE WATER QUALITY REGULATIONS

October 3, 1992, 10:00 a.m. - 1:00 p.m.
Anchorage Legislative Information Office conference room
3111 C Street
Statewide teleconference

Environmental Protection Agency

Al Ewing, Assistant Regional Administrator
Sally Marqueth, Water Quality Standards Coordinator
- Clean Water Act: Federal mandates and state options

Department of Environmental Conservation

John Sandor, Commissioner
Dave Sturdevant, Water Quality Mgmt. - Review proposed water quality regulations

Panel #1

Jerry McCune - United Fishermen of Alaska
Riki Ott - United Fishermen of Alaska

George Yaska - Tanana Chiefs Conference

Gershon Cohen - Alaska Clean Water Alliance
Mike Wenig - Trustees for Alaska

Nancy Lethcoe - AK Wilderness Recreation & Tourism Assoc.

Panel #2

Edward Oetkin - Alaska Pulp Corporation
Richard Harris - Sealaska Corporation

Karl Hanneman - Alaska Placer Development
Charlie Boddy - Usibelli Coal Mine, Inc.

Becky Gay - Resource Development Council

- Oil industry representative

PUBLIC TESTIMONY

Alaska State Legislature

HOUSE RESOURCES COMMITTEE

P.O. Box V
State Capitol
Juneau, Alaska 99811
(907) 465-3715

September 17, 1992

Commissioner John Sandor
Department of Environmental Conservation
410 Willoughby Avenue, Suite 301
Juneau, Alaska 99801-1795

Dear Commissioner Sandor:

The House Resources Committee will hold a hearing to review the Department of Environmental Conservation proposed revisions to Alaska's Water Quality Standard Regulations in Title 18 Chapter 70 (18 AAC 70) of the Alaska Administrative Code. The meeting is scheduled for Saturday, October 3 from 10:00 to 1:00 p.m. at the Anchorage Legislative Information Office located at 3111 "C" Street, Suite 150.

The purpose of the meeting is to determine the basis and need for the proposed regulations and their expedited review, determine the impact of the proposed revisions on the economy, health and welfare of Alaska, and provide further opportunity for public review and testimony. As you are aware, there has been considerable controversy over these proposed regulations. You should view this hearing as an opportunity to brief legislators and the public on the need for revisions to our existing water quality standards.

I would request the attendance of DEC technical staff familiar with the regulations and available to answer questions regarding the proposed revisions. Thank you for your assistance and cooperation. With best regards,

Sincerely,

Representative Cliff Davidson
Chairman

Alaska State Legislature

HOUSE RESOURCES COMMITTEE

P.O. Box V
State Capitol
Juneau, Alaska 99811
(907) 465-3715

September 17, 1992

Mr. Chuck Findley
U.S. EPA Region X
Mail Stop WD-131
1200 Sixth Avenue
Seattle, WA 98101

Dear Mr. Findley:

The House Resources Committee of the Alaska Legislature will hold a hearing to review the Department of Environmental Conservation proposed revisions to Alaska's Water Quality Standard Regulations in Title 18 Chapter 70 (18 AAC 70) of the Alaska Administrative Code. The meeting is scheduled for Saturday, October 3 from 10:00 a.m. to 1:00 p.m. at the Anchorage Legislative Information Office located at 3111 "C" Street, Suite 150.

The purpose of the meeting is to review the proposed regulations, determine the impact of the proposed revisions on the economy, health and welfare of Alaska, and to provide further opportunity for public review and testimony. As you are aware, there has been considerable controversy over these proposed regulations. I am hopeful that this hearing will also provide a useful forum for legislators to compare the existing water quality standards with the new regulations offered by the DEC.

I would appreciate the presence of EPA staff who can address questions regarding the relationship between federal and state water quality laws and regulations and the federal timeline for review of the proposed state regulations. Thank you for your assistance. With best regards,

Sincerely,

Cliff Davidson

Representative Cliff Davidson, Chairman
House Resources Committee

Mr. Alvin L Ewing, EPA, Assistant Regional Administrator, Alaska

Alaska State Legislature

HOUSE RESOURCES COMMITTEE

P.O. Box V
State Capitol
Juneau, Alaska 99811
(907) 465-3715

M E M O R A N D U M

TO: All Members, House Resources Committee

FROM: Representative Cliff Davidson, Chairman
House Resources Committee

DATE: September 17, 1992

SUBJECT: House Resources Committee Meeting

The House Resources will hold a hearing by teleconference Saturday, October 3 from 10:00 a.m. - 1:00 p.m.

The purpose of the hearing is to review the Department of Environmental Conservation proposed revisions to the Alaska's Water Quality Standard Regulations as outlined in 18 AAC 70. The public review packet compiled by the Department is enclosed.

The meeting will be chaired from the Anchorage Legislative Information Office at 3111 "C" Street, Suite 150. Members can participate via the legislative teleconference network.

Please contact the House Resources Committee Office at 561-7617 if you have questions or need additional information. Thank you.

```
**********************************************************************
*** REQUESTOR: LIOCJAS - Suire, James                31LAA          ***
**********************************************************************
***                  S Y S M   A U T O M A T I C   P R I N T        ***

MESSAGE ID: 246024E      DATE: 10/03/92  TIME: 12:34    PRIORITY: 000

TO:         LIOCJAS - Suire, James
            Information Assistant
            31LAA
            3111 C Street
            Suite 150
            Anchorage, AK 99503


FROM:       LIOCPSG - Penttila, Dorothy
            Leg. Info. Officer
            31LAA
            Box 1470
            Petersburg, 99833


SUBJECT:    92-09-011
participate list #2
t/c: 92-09-011  proposed state water quality regulations
October 3, 1992
(H) Resources
Moderator:      Olivia
site:           Petersburg
(1) Kris Norosz     Box 232 Petersburg, 99833   ***yes to testify
    Petersburg Vessel Owners Assoc.
(2) Dave Mcfadden   Box 668, Petersburg, 99833   ***yes to testify
(3) Eric Lee        box 251, Petersburg, 99833      observe only
(4) Kerry Beebe     Box 148, Petersburg, 99833      observe only
(5) Becky Knight    Box 1331 Petersburg, 99833  ***yes to testify
please note 3 to testify.............

Sent to:    LIOCJAS              - James Suire                  (to)
```

LEGISLATIVE TELECONFERENCE NETWORK

SIGN-IN SHEET

SPONSOR: (H) Resources

SUBJECT: Proposed State water quality Regulation

START/END TIME: 10:00 Am DATE: 10/3/92

PLEASE PRINT

	NAME/REPRESENTING	ADDRESS	PHONE #	TESTIFY	OBSERVE	BILL #
1	Kris Norcusz/Petersburg Vessel Owners Assoc	P.O. BOX 232 Petersburg	772-3223	X		
2	Dave McFadden	P.O. 668 Petersburg AK	772-9382	X	~~✓~~	
3	ERIC LEE	BOX 251			✓	
4	Kerry Beebe	Box 148 PSG AK 99833	772-3808 (messg. phone)		✓	
5	Becky Knight	BOX 1331 JNU AK 99833	772-9371	X	~~✓~~	
6						
7						
8						
9	Participant List # 3					
10						
11	please note 3 to					
12	testify					
13						
14						
15						
16						
17						
18						

LEGISLATIVE TELECONF[illegible] NETWORK

SIGN-IN SHEET

[illegible]

SPONSOR: L. Sources

SUBJECT: Water Quality

START/END TIME: _____ DATE: 10-3-92

	Signature	Printed Name/Representing	Mailing Address/City	Phone	Bill #	Testify	Observe
1	Don G. Muller	DON G. MULLER	1012 Sitka AK	74			
2	EPO Other	ER OE [illegible]	4600 Sawmill Rd Sitka, AK 99835	747-[illegible]			
3	Robert Ellis	Robert Ellis	Box 2966 Sitka	747-8454			
4	Page Else	Page Else	219 Sawmill Creek Hwy SHKA	747-7448			
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6							
7		MINES					
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[illegible]

OCT 03 '92 15:35 SITKA LEG. INFO.

TELECONFERENCE PARTICIPANT LIST

Chairing Moderator: JAMES

T/C NO.: 92-09-011
DATE OF T/C: 10/03
SPONSOR/COMMITTEE: (H) RESOURCES
SUBJECT/BILL(S): WATER QUALITY
LOCAL MODERATOR: ADAM

SITE: JUNEAU

TESTIFYING/SPEAKING

Name/Affiliation	Address/Zip	Phone	Bill No.
1. JACK COTTRELL GREENS CREEK			
2. JEANNE COCHRAN SIERRA CLUB LEGAL DEFENSE CLUB	IF THERE ARE QUESTIONS		
3. NOREEN HOUTALA			
4. MARNA SCHWARTZ SEALC			
5.			

OBSERVING ONLY

Name/Affiliation	Address/Zip	Phone	Bill No.
1.			
2.			
3.			
4.			
5.			

*** REQUESTOR: LIOCJAS - Suire, James 31LAA ***

*** S Y S M A U T O M A T I C P R I N T ***

MESSAGE ID: 246074 DATE: 10/03/92 TIME: 14:51 PRIORITY: 000

TO: LIOCJAS - Suire, James
Information Assistant
31LAA
3111 C Street
Suite 150
Anchorage, AK 99503

FROM: LIOCVAL - LIO, Valdez
Leg. Info. Office
31LAA
P.O. Box 1969
Valdez, AK. 99686

SUBJECT: more participants

james,
greg williams would also like to ask a few questions if time allows.
thanks sharon

Sent to: LIOCJAS - James Suire (to)

*** REQUESTOR: LIOCJAS - Suire, James 31LAA ***

*** SYSM AUTOMATIC PRINT ***

MESSAGE ID: 246052 DATE: 10/03/92 TIME: 13:04 PRIORITY: 000

TO: LIOCJAS - Suire, James
Information Assistant
31LAA
3111 C Street
Suite 150
Anchorage, AK 99503

FROM: LIOCVAL - LIO, Valdez
Leg. Info. Office
31LAA
P.O. Box 1969
Valdez, AK. 99686

SUBJECT: testimony ~~James~~ RCAC Tourism Cttee

joe bridgman would also like to testify. also nancy letchoe will be leaving at 1:20 if they are taking questions from the panel.
sharon

Sent to: LIOCJAS - James Suire (to)

HAINES Ronald Sparkes →

SUBJECT: Mini Participant List

TELECONFERENCE PARTICIPANT LIST

Chairing Moderator: JAMES

T/C NO.: 92-09-011
DATE OF T/C: 10/3/92
SPONSOR/COMMITTEE: (H) RESOURCES
SUBJECT/BILL(S): PROPOSED STATE WATER QUALITY REGULATIONS
LOCAL MODERATOR: SHARON

SITE: VALDEZ

TESTIFYING/SPEAKING

Name/Affiliation	Address/Zip	Phone	Bill No.
1. NANCY LETCHOE			
2. TOM VAN BROKLIN			
3.			
4.			
5.			

OCT 03 '92 10:07 LEG. AFFAIRS - KETCHIKAN

LEGISLATIVE TELECONFERENCE NETWORK

Ketchikan

SIGN-IN SHEET

SPONSOR: (H) Resources

SUBJECT: State Water Quality Regs

START/END TIME: 10 AM / DATE: 10-3-92.

PLEASE PRINT

	NAME/REPRESENTING	ADDRESS	PHONE #	TESTIFY	OBSERVE	BILL #
1	Roland J. Stanton	3817 Fairview	225 3906	X		
2	Kathy French	14525 N. Tongass	225-3300	X		
3						
4						
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Post-it™ brand fax transmittal memo 7671 | # of pages ▸ 1
To James | From Rae
Co. | Co. KTN LIO
Dept. | Phone #
Fax # 5602-4376 | Fax # Pg #2

LEGISLATIVE TELECONFERENCE NETWORK

(2)

☞ SIGN-IN SHEET

SPONSOR: House Resources

SUBJECT: Proposed State Water Quality Reg

START/END TIME: 10:00 Am DATE: 10-3-92

PLEASE PRINT

	NAME/REPRESENTING	ADDRESS	ZIP	PHONE#	TESTIFY	OBSERVE	BILL #
1	ERIC MYERS / myself	6710 Potter Hghts · Anch	99516	345-3366		X	N/A
2	Johanna Munson (Sen. Curtis Menard)	165 E Parks Hwy Wasilla	99654	373-2878		X	
3	Bev Postmar myself	3208 woodcourt Park	99517	243-7499	X		
4	Marilyn Turtinen	1337 Virginia Court, Anchorage	99501	272-7112			
5	Fred Zharoff	Box 405 Kodiak	99615	486-5259		X	
6	Walt Parker / self	3724 Campbell Airstrip Rd	99504	333-5189		X	
7	Peg Tileston / self	4780 Cambridge Anch	99503	561-0540	X		
8	Pam Miller / self	PO Box 103848 Anch	99510	274-6853			
9							
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Anch

LEGISLATIVE TELECONFERENCE NETWORK

(1)

SIGN-IN SHEET

SPONSOR: House Resources

SUBJECT: Proposed State Water Quality Reg

START/END TIME: 10:00 AM DATE: 10-3-92

PLEASE PRINT

	NAME/REPRESENTING	ADDRESS	ZIP	PHONE#	TESTIFY	OBSERVE	BILL #
1	CARL RUTZ / A.P.S.C.	1835 S. BIRCH W ST, ANCH AK	99517	265-8147		✓	
2	Tim. Jones / Alaska Clean Water Alliance	Box 672, Haines Alaska	99827	7662028	✓		
3	George Yaska / Tanana Chiefs Conf.	122 1st Ave, Fbks., AK	99701	452-8251	✓		
4	Carsten Cotter / AK. Clean Water Alliance	Box 956 Haines AK	99827	766-2488	✓		
5	Kathy Ott / RDC Inc.	121 W. Fireweed #250	99503	8760708	✓		
6	JIM LEVINE	7343 LINDEN DR	99502	2480742		✓	
7	Cheryl Jung Cheng Jong	Box 60 Buckland AK	99503	(Local) 561-4032	✓		
8	Mike Franta	2224 Turnagain Pkwy	99517	2485078		✓	
9	Karl Ohls	3111 C St., #520, Anch.	99503	561-2003		✓	
10	Marilyn Heiman	1401 Virginia Ct Anch AK 99501	99501	272-3034		✓	
11	Bryce Edgmon (Rep. Jacko)	3111 C St. 200 Anch AK	99503	561-6154		X	
12	SUSAN MURPO	935 David Place Anch, AK	99501	———		X	
13	Nina Brudie (Rep. Ellis)	3111 C St #455 A/A	503	561-7628		X	
14	MIKE WENIG / TRUSTEES FOR ALASKA	725 Christensen Dr, #1 ANCH	99501	276-4244	✓		
15	Pam Miller	Greenpeace PO Box 104432	99510	2775234		✓	

FAX TO: 562-4316

TC # 92-05-011 Proposed State Water Quality Regs

DCT. 3, 1992

(H) Resources

MODERATOR: Olivia

SITE : Petersburg

PARTICIPATE LIST #3

	TESTIFY	OBSERVE	BILL #
(1) Kris Norosz Petersburg Vessel Owners Assoc.	X		
(2) DAVE McFadden	X		
(3) [redacted] Lee	X	#	
(4) Becky Knight	X		

TESTIFIER # 2 DAVE McFADDEN

had to Leave 1:30

update

—we have 2 Left who would like to testify—

P.1/1

Legislative Affairs Agency ~~Homer~~

Teleconference

DATE: October 3, 1992

SPONSOR: House Resources

TIME: START_____ END_____

SUBJECT OF MEETING:

Proposed State Water Quality Regulations

NAME	REPRESENTING	BUSINESS/PERSONAL MAILING ADDRESS	ZIP	(H) PHONE	(W) PHONE	DO YOU WANT TO TESTIFY?		WHAT SUBJECT/ WHICH BILL?
Nancy J. Hillstrand	COOK INLET VIGIL	P.O. Box 674 - Homer	99603	235 2572		Y	N	WATER QUALITY STANDARDS
						Y	N	
						Y	N	
						Y	N	
						Y	N	
						Y	N	
						Y	N	
						Y	N	
						Y	N	
						Y	N	
						Y	N	

STATS ADDRESS:_____

A3

800-478-7612 James

Fairbanks

SIGN-IN SHEET

SPONSOR: House Resources 92-09-011

SUBJECT: State Water Quality Regulations

START/END TIME: 10 DATE: 10/3/92

PLEASE PRINT

	NAME/REPRESENTING	ADDRESS	ZIP	PHONE#	TESTIFY	OBSERVE	BILL #
1	Doug Welton - Public	6810 Steese Hwy Weltown	99712	474 9883	X		
2	Charlie Boddy - Panel	1179 Kodiak St.	99709	474-8153	✓		
3	Sylvia Ward - NAEC	218 Drive Ward FBKS	99701	452-5021	✓		
4	Joanne Gustafson - Public	1660 Fairbank St. Bldg. C-Apt #2	99709	479-9186		✓	
5	Karl Hanneman - Panel	626 2nd Street, Fbks, AK 99701	99701	452-8685	✓		
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STATE OF ALASKA

WALTER J. HICKEL, GOVERNOR

DEPT. OF ENVIRONMENTAL CONSERVATION

STATEMENT BY JOHN A. SANDOR, COMMISSIONER
ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
AT THE OCTOBER 3, 1992 HEARING
ALASKA HOUSE NATURAL RESOURCES COMMITTEE
ANCHORAGE, ALASKA

I am pleased to have the opportunity to appear before this Committee to discuss the extremely important topic of revisions to the State's water quality standards. With the Committee's concurrence, I would like this statement included in the hearing record.

David Sturdevant, the Department's Water Quality Standards Coordinator, is here also to discuss the technical details associated with the revision process.

First, I would like to express my appreciation to the Committee for the interest you have taken in this complex and extremely important process. Alaska's water quality standards are an important part of the State's environmental protection programs. They have a significant impact on communities, businesses and individuals. They have a direct day-to-day effect on all Alaskans.

There appears to be a widespread public concern that DEC's proposed revisions will lower water quality standards, resulting in a State-wide degradation of water quality and reduction in fish populations. We want to emphasize that this is not the case. I also want to stress that the revisions are proposals that we have released for public comment. I assure you we will thoroughly review and consider all comments we receive.

The water quality standards revisions process deals with complex, technical issues. The standards in part involve ongoing scientific research and as such are often controversial. Some questions related to health risk may be decades away from final resolution. How does one best communicate risk? This complex question may be the most difficult issue to deal with in the revisions process. Because of this and other complex issues, the Department provided an unprecedented amount of documentation along with the draft revisions. This information was painstakingly prepared to provide reviewers with the technical support for the recommendations contained within the draft regulations. It was also prepared in the hope that it would provide a technical framework from which reviewers could construct sound arguments either in favor of, or in opposition to, the proposed revisions.

It is also in this context that DEC announced a 30-day extension in the public comment period through October 31, 1992. During this period the DEC will be receptive to receiving and discussing any additional technical comments anyone would wish to submit.

I want to also note that the Department has been communicating with the Environmental Protection Agency (EPA) on this issue throughout this Triennial Review process and that we will continue to do so in the future.

You have specifically asked that I comment on the basis and need for the proposed regulations and their expedited review; and the impact of the revisions on the economy, health and welfare of Alaska. I will briefly cover each of these points. I would like to include as a part of this presentation a copy of my testimony to the Senate Resources Committee delivered on May 4 of this year. It contains a great deal of information pertaining to what water quality standards are, why we are involved in the process, what role the standards play in water quality permitting, and how the revision process works.

Let me begin by explaining the basis for Alaska's Water Quality Standards. The federal government, through the Clean Water Act, requires all states to create and periodically update standards which establish allowable limits in all natural waters for pollutants that result from human actions. EPA must review and approve all state water quality standards.

Alaska's Water Quality Standards Regulation is in the Alaska Administrative Code, 18 AAC 70. Alaska has had Water Quality Standards for 40 years, predating both statehood and DEC. The territorial Legislature established the Alaskan Water Pollution Control Board in 1949. The first Water Quality Standards were produced in 1952 in a joint effort with the Northwest states and British Columbia. With statehood, the 1952 Standards were translated into the State Administrative Code under the Department of Health and Welfare. DEC inherited the standards when the agency was formed in 1971. Since that time, the State has undergone periodic revisions to those Standards.

The Clean Water Act requires all states go through a formal review process every three years; commonly referred to as the Triennial Review. This process is intended to update the standards and incorporate the "latest" scientific findings in the water quality field. The Triennial Review has several phases: first, a public comment period to solicit proposed modifications; second, preparation of draft revisions by DEC; third, public notice and hearings on the draft revisions; fourth, Departmental adoption and certification by the Attorney General and the Lieutenant Governor; and fifth, review and approval by EPA. If EPA disapproves the State's proposed Water Quality Standards, they can go through rule making and adopt federal standards for

the state.

We consider the current round of revisions as another significant benchmark in the long term process aimed at bringing Water Quality Standards up to a state-of-the-art level. First, we need to make various improvements on the present language and organization of the standards. Second, federal mandates will require adding provisions such as sediment quality criteria, and antidegradation measures. Third, we envision preparing a technical support document that provides guidance on sampling and analytical/mixing zone procedures, protocols, and many other water quality related issues. There will be a continuing process of development followed by public review and comment over the next several years.

These remarks form the first part of the answer to the Committee Chairman's question about the basis for the proposed revisions. The second part lies in a 1987 amendment to the Clean Water Act. The Act requires each state to adopt criteria for EPA's toxic "priority pollutants." This applies to two differing sets of criteria -- first, criteria to protect aquatic life; and second, criteria to protect human health. Alaska some years ago adopted EPA's aquatic life criteria.

It is important to note that there is no proposal or intent to change the aquatic life criteria. These provide a fundamental and sound level of protection for all of Alaska's waters. That is why it is wrong to infer that the proposed revisions will result in a lowering of water quality. We are now proposing adoption of human health criteria, those for dioxin, chloroform, and arsenic. As many of you know, if any state does not adopt the human health criteria, EPA will impose criteria through federal regulation called the National Toxics Rule, issued in draft last November. We believe it is important for Alaska to adopt human health criteria as a part of this Triennial Review process.

Finally, the proposed revisions address a variety of additional matters that <u>add to</u>, <u>modify</u>, and <u>clarify</u> a variety of provisions in the present standards. The notable provisions <u>added</u> pertain to a limit on chronic toxicity of whole effluent, and allowing standards to be set up to natural pollutant levels where natural levels exceed the State criteria. <u>Modifications</u> include changes to certain existing criteria for sediment, color, fecal coliform bacteria and hydrocarbons. Language <u>clarification</u> is proposed for mixing zones, the definition of State waters, and other items.

<u>Adoption of human health criteria</u>. Human health criteria for carcinogenic pollutants protect humans who are exposed by drinking contaminated water or eating contaminated fish and shellfish over a 70-year life span. They are a completely new

layer of standards, and apply only when they are more stringent than aquatic life criteria. Human health criteria can only make existing standards more stringent.

Nonetheless, there are significant issues with respect to human health criteria. These include the cancer "risk level" (one-in-1,000,000 or one-in-100,000), fish consumption rate, bioconcentration factor, and cancer potency factor.

Dioxin. Dioxin is a particular concern. Currently, no federal or State criteria exist for dioxin in marine waters. With the adoption of State human health criteria, any discharge of materials containing dioxin will be limited for the first time.

DEC believes the cancer risk level proposed for dioxin, one-in-100,000, is an acceptable risk. The overall lifetime risk of cancer in the U.S. is roughly one-in-four. This means 25,000 out of every 100,000 citizens may contract cancer. Adding a one-in-100,000 risk from exposure to dioxin would raise the overall cancer risk to 25,001 per 100,000. EPA has approved dioxin criteria at the level proposed, 1.2 parts per quadrillion, for at least ten other states.

Arsenic. Arsenic is another complex issue. Our proposed human health criteria for arsenic are less stringent than EPA's default criteria at one-in-one-million or one-in-one-hundred-thousand. The DEC recognizes the relatively high toxicity of inorganic arsenic, while at the same time acknowledging that fish contain, for example, the organic form of arsenic that has negligible toxicity. The DEC does not believe there is a significant exposure pathway to arsenic toxicity for humans consuming fish. However, we will discuss this with EPA and Food and Drug Administration technical staff.

Mixing Zones. The mixing zone is a volume of water around an industrial discharge in which water quality criteria may be exceeded. Mixing zones have been authorized in our regulations since 1979 and are common practice nationally. Contrary to perceptions, our intent is not to weaken the mixing zone provision. Several additions clearly strengthen the provision. However, we have learned that some of our proposed language fails to accomplish the clarification that we sought. Public comment has been helpful, and the DEC will reexamine that language.

Waters of the State. This definition establishes what types of waters are subject to the water quality standards, and which waters are exempt -- namely ponds, lagoons and impoundments authorized to be used as waste treatment facilities where construction and operation are approved by the Department by permit or plan review. We sought to provide clarification of these exemptions at the recommendation of our field staff and the Attorney General's Office. Our intent is to codify current

policy with regard to treatment facilities. There is no intent to weaken the definition, or to exempt waters unduly. Public comments suggested confusion and concern. We will work with EPA and others to clarify this language.

Other issues. The revisions address other important issues that also have raised concerns, including new provisions for natural pollutant levels and whole effluent toxicity, and modifications to existing criteria for sediment, fecal coliform bacteria, color, total hydrocarbons, and Alaska-specific criteria. The Department would be pleased to receive and address any concerns your Committee may have.

Public process. Now let me discuss our public review process. DEC has conducted this public review in an open manner. We greatly increased our normal public outreach efforts for regulatory matters. We communicated widely with interested parties from both industry and environmental groups. We prepared eight questionnaires on potential revision topics and distributed them to a "working group" list of about 80 individuals, inside and outside of DEC. The public review packet contains a set of issue papers addressing every major topic in the proposed revisions. A preliminary version of some of these issue papers was circulated to working group members in late June, prior to the public review period. While these issue papers have been criticized by some, they clearly have placed the issues squarely before the public and have provided the basis for informed response.

The present formal public review process began July 1. Because of the level of interest in this issue and requests for extension of time, DEC extended the end of the comment period from August 10 until September 30, for a total of 92 days. We issued public notice of the proposed revisions widely, first to six newspapers, and then to a long mailing list of potentially interested parties. The public notice was repeated at least five times, including 14 newspapers in conjunction with the time extension. We have held seven public hearings, including a wrap-up hearing by teleconference in 15 locations on Friday of last week. We issued Public Service Announcements regarding the teleconference to about 40 radio stations.

Our DEC staff report they have spent upwards of 200 hours discussing the proposed revisions with the media, legislative staff, and the public.

Despite these efforts, there is still a perception of some that DEC is proposing to "significantly weaken the State's existing water quality standards", and that this will result in statewide degradation of water quality and reduction of fish populations.

We would like to correct this perception. We have made no

proposal, and have no intent, to change the State's aquatic life criteria. These are the fundamental standards that protect not only fish and shellfish, but the entire freshwater and marine ecosystems. They are the basic standards applied in wastewater discharge permits. Human health criteria will apply only where they are more stringent than aquatic life criteria. There will be no lowering of water quality in this State. The proposed changes to existing criteria are based on improved methods criteria and scientific findings.

The next issue raised by the Chairman relates to the need for the expedited review. The testimony that I presented to the Senate Resources Committee details the need for the pace that the Department has set. In order to accommodate the increased interest in this topic, the Department extended the comment period 51 days and added additional hearings to the original proposed schedule contained within the Senate testimony. The need to deal with these issues, however, still remains.

Failure on the part of the State to adopt human health criteria will result in the federal government adopting rules for the State. The federal government may well adopt a human health risk factor of one additional cancer death in one million and a very conservative cancer potency factor. Our professional staff does not believe this degree of stringency is warranted given the stage that the science which supports these numbers is at. There are debates currently among the nation's best scientists concerning the applicability, methodology, and end result of the techniques that EPA used to arrive at the numbers they are in the process of adopting for Alaska. Key points of this debate and the rationale that the State used in arriving at the risk level we propose to include in the Water Quality Standards are contained within the documentation that was provided in our Public Review packet. In addition, many other states agree with us.

It should be noted that the various federal agencies which deal with health risks have different approaches to defining risk levels. We are, in fact, working with the Environmental Protection Agency, Food and Drug Administration, the U.S. Department of Agriculture in the process of defining Alaska's health risk standards.

To conclude this discussion, let me emphasize two points. First, failure on the part of the State to promulgate "reasonable" standards will result in federal imposition of standards that our analyses find are insupportable for the level of stringency proposed. As a note of interest, there are 14 other states and territories who, like Alaska, are still doing the research which leads to the selection of defendable human health standards. Also, 19 states, having completed that analyses, have selected the 10-5 number that Alaska proposes to select and have received

EPA Approval. (23 states have chosen the 10-6 number). The second point is that the State has a significant number of major water permits under development and the permittees should know what the standard will be. Delay on the part of the State to promulgate standards could result in the imposition of federal standards on these permits.

Because of the public review process underway, the citizens of Alaska will have had a significant voice in the final outcome. That is good. As I stated earlier, the Department went through extraordinary effort to generate and distribute supporting technical data along with the proposed rules in the hopes of generating spirited technical debates.

It should also be noted that the Department established an Alaska Water Quality "Help" group several years ago. This group is composed of members of the environmental protection community as well as the development community. These members have received countless mailings on the topics currently undergoing public review and their input has been sought at every turn of the road. We have been researching these topics for several years and have already appreciated comments or advice from these groups.

The last question posed by the Committee Chairman is by far the most difficult to answer. The determination of the impact of the proposed revisions on the economy, health and welfare of Alaska can only be estimated.

Our intent is to develop effective Water Quality Regulations based on sound scientific analyses. At the same time, the standards should protect Alaska's unique environment and afford Alaskans the opportunity to safely develop new revenue sources. We have attempted to strike a balance between environmental protection and economic opportunity.

In this context, let me introduce for the record the summary recommendations of the Task Force which has been reviewing the water-sanitation needs of rural Alaska. The recent series on this subject in the Anchorage Daily News clearly defined the problem. The Task Force's recommendations suggest ways to correct this problem. Alaska must have a strong economy to deal with this and other environmental health issues. Your views on the task force recommendations would be helpful.

Each one of us will likely have different views on what is the best balance between environmental protection and economic opportunity. I believe that by working together the people of Alaska can protect water quality and other environmental values. At the same time we can strengthen Alaska's economy so that environmental health problems like the water and sanitation conditions of rural Alaska can be improved.

Testimony before Alaska State Legislature
House Resource Committee
Al Ewing, Assistant Regional Administrator
Environmental Protection Agency
October 3, 1992

Good Morning. My name is Al Ewing. I am the Director of EPA's Alaska Operations Office. Sally Marquis, our water quality standards coordinator responsible for working with the state of Alaska, and I are here at the request of Representative Cliff Davidson. Representative Davidson asked us to address questions regarding the relationship between federal and state water quality laws and regulations.

The mission of EPA is to protect human health and the environment. The specific objective of the Clean Water Act "is to restore the chemical, physical, and biological integrity of the Nation's waters." The Clean Water Act often delegates authority to the states. The rationale behind this delegation is that the states are in a better position to understand the specific and unique situations that may exist within their borders.

Regarding the water quality standards, the Clean Water Act has delegated authority to the states. Currently, EPA is in the process of reviewing proposed state standards; hence, my presence here today.

In order to understand the process we are involved in, it is important to understand the roles and responsibilities of the public, the state and EPA. EPA's role is to support your state in developing your standards and to ensure that they are consistent with federal mandates. Specifically, we:

- Ensure adequate public involvement and review of proposed regulations;
- Ensure the scientific defensibility of the regulations; and
- Ultimately support the development of regulations that support human health and the environment and are within the scope of requirements of the Clean Water Act.

EPA provides support for states in developing regulations in a number of ways. The agency conducts studies which address scientific and technical issues; develops national policies based on the best scientific data; and provides a national perspective. At the regional level, we provide the link between the expertise which EPA has to offer and the state.

For the states, responsibilities run roughly parallel to federal responsibilities. The states must:

- Ensure adequate public involvement and review of proposed regulations;
- Ensure the scientific defensibility of the regulations;
- Ultimately develop regulations that support human health and the environment; and
- Obtain approval from EPA that the regulations are within the scope of requirements of state and federal statutes.

For the public, forums such as this provide you with an opportunity to express your opinions and concerns. It is important to recognize that both the state and EPA are operating under both state and federal laws and guidance. Public hearings and public opinion may influence decisions as long as the final rules are in compliance with state and federal requirements.

This raises the question, "How much flexibility is there?" In the case of the Clean Water Act, EPA's job is to ensure that state actions are consistent with federal requirements. Beyond this, states may exercise their own judgement. In the case of water quality standards, this depends on the specific issue, the specific contaminant, the specific situation. For example, standards for "priority pollutants" for which data abounds may be relatively rigid; whereas standards for unregulated contaminants may be quite flexible.

So, where are we now in this process with regard to Alaska? EPA, the state and the public are currently involved in the triennial review of Alaska's water quality standards. This periodic review is essential if we are to have standards based on the most current field work and scientific data. It also allows us to modify existing standards based upon experience gained from Alaska and other states.

Although there is considerable flexibility in the way states conduct their triennial reviews, the essential elements typically include:

- Water quality standards are reviewed to identify needs, and public review is requested;
- Initial public comment is considered and regulatory language is proposed;
- Public hearings are held and comments received;
- Language is revised as appropriate;
- The regulations are formally adopted by the state and become state law;
- The regulations are submitted to EPA for approval, and;
- Should EPA disapprove the regulations, the state's regulations remain in effect as law until the state revises its standards or until EPA "overrides" state law, a process which can take some time.

Because EPA approval is critical both to the state and the agency, states typically involve EPA all through the process. But what happens if there is conflict? This depends upon the parties involved. I would like to address this from EPA's perspective. Three typical scenarios come to mind:

1) Disagreements within the state.
EPA does not mediate disputes within a state's borders. As a public agency, we provide information to any group or individual requesting information, provided that the information is not "pre-decisional" or of a confidential nature. We are committed to maintaining impartiality.

2) Disagreements between states or, between a state and Native Americans.
Initially, EPA will encourage the parties to resolve their own differences. If there is an impasse, EPA will offer assistance in resolving disputes. This sort of dispute often results from contamination of downstream waters. A fundamental premise is that downstream water quality standards must be met.

3) Conflicts between states and EPA.
When the states submit draft regulatory language, EPA will respond. If concerns are significant, EPA will make every effort to resolve the concerns before the standards are adopted. In the vast majority of cases, conflicts are resolved in this manner.

Generally, EPA will approve state regulations within 60 days. If EPA determines that the water quality standards are not approvable, EPA must notify the state and specify what changes need to be made within 90 days. The state then has 90 days to adopt changes.

If a state does not adopt the necessary changes, EPA must move to override state regulations. However, the state regulations remain in effect until this process is complete.

I would like to conclude by reiterating four basic points regarding what role EPA plays in states' water quality standards process:

1) To ensure public participation has occurred;
2) To provide technical, scientific and practical information;
3) To ensure scientific defensibility, and;
4) To ensure consistency with national requirements.

Again, EPA is interested in working with the state throughout this process in order to achieve the mutual goal of implementing water quality standards in a manner which is responsive to the citizens, protective of the environment and consistent with national policy.

Thank you.

STATE OF ALASKA

WALTER J. HICKEL, GOVERNOR

DEPT. OF ENVIRONMENTAL CONSERVATION

OFFICE OF THE COMMISSIONER
410 WILLOUGHBY AVENUE, SUITE 105
JUNEAU, AK 99801-1795

Phone: (907) 465-5000
Fax: (907) 465-5070

October 12, 1992

Senators and Representatives
Alaska State Legislature

Dear

This is a status report on the Department of Environmental Conservation's (DEC) efforts to update Alaska's Water Quality Standards. The federal government, through the Clean Water Act, requires all states to create and periodically update Water Quality Standards. These standards establish allowable limits in all natural waters for pollutants that result from human actions. The Clean Water Act requires all states go through a formal review process every three years; commonly referred to as the Triennial Review. Alaska began the present Triennial Review in 1990. The Senate Resources Committee held a hearing on this subject May 4, 1991; the House Resources Committee held a hearing on October 3, 1992.

Enclosed is a copy of the paper: "The Importance of Updating Alaska's Water Quality Standards", prepared for the October 6, 1992 meeting of the Alaska State Chamber of Commerce. This paper summarizes the Triennial Review process now underway. The present, public review process began July 1. DEC extended the end of the comment period from August 10 until September 30. The Department extended the public comment period another month to October 31, 1992. During this month, DEC will also be working with the Environmental Protection Agency (EPA) to resolve technical issues raised in their draft comments (also enclosed).

From the enclosures, you will note that the DEC proposes no changes in the AQUATIC LIFE CRITERIA. These are the fundamental standards that protect not only fish and shellfish, but the entire freshwater and marine ecosystems. The Department is proposing the adoption of new HUMAN HEALTH CRITERIA for carcinogenic pollutants. As you may know, if any state does not adopt its own human health criteria, EPA will impose criteria through federal regulation called the National Toxics Rule, which was issued in draft form last November. We believe it is important for Alaska to adopt human health criteria as a part of this Triennial Review process. Some aspects of the proposed human health criteria have generated concern - particularly the level of lifetime cancer risk to be adopted by the State.

Human Health Criteria for carcinogenic pollutants protect humans who are exposed by drinking contaminated water or eating contaminated fish and shellfish over a 70-year life span. They are a completely new layer of standards, and apply only when they are more stringent than aquatic life criteria. Human Health Criteria can only make existing standards more stringent. Nonetheless, there are significant issues with respect to Human Health Criteria. These include the cancer risk level (one in 100,000 or one in one million), fish consumption rate, bioconcentration factor, and cancer potency factor.

Dioxin is a particular concern. Currently, no federal or State criteria exist for dioxin in marine waters. With the adoption of State human health criteria, any discharge of materials containing dioxin will be limited for the first time. DEC believes the cancer risk level proposed for dioxin, one in 100,000 is an acceptable risk. The overall lifetime risk of cancer in the U.S. is roughly one in four. This means 25,000 out of every 100,000 citizens may contract cancer. Adding a one in 100,000 risk from exposure to dioxin would raise the overall cancer risk level to 25,001 per 100,000. EPA has approved dioxin criteria at the level proposed, 1.2 parts per quadrillion, for at least ten other states.

Arsenic is another complex issue. The DEC recognizes the relatively high toxicity of inorganic arsenic, while at the same time acknowledging that fish contain primarily the organic form of arsenic that has negligible toxicity. The DEC does not believe there is a substantial exposure pathway to arsenic toxicity for humans consuming fish. However, we will review this matter with EPA and Food and Drug Administration technical staff.

These points illustrate some of the complexities involved in developing Human Health Criteria for Alaska. The Department believes that the State should develop its own criteria, rather than be subject to the criteria which may be imposed when the National Toxics Rule is finally adopted. The DEC expects to develop the final revisions to the States Water Quality Standards following the close of the public comment period October 31, 1992, and our technical review with EPA.

If you have any questions or comments on these or other issues related to Alaska's Water Quality Standards, I and the DEC's professional staff would be pleased to discuss them.

Sincerely,

John A. Sandor
Commissioner

Enclosures: EPA's October 5, 1992 Draft Comments
Paper on Alaska's Water Quality Standards

STATE OF ALASKA / WALTER J. HICKEL, GOVERNOR

DEPT. OF ENVIRONMENTAL CONSERVATION

OFFICE OF THE COMMISSIONER
410 WILLOUGHBY AVENUE, SUITE 105
JUNEAU, AK 99801-1795

Phone: (907) 465-5000
Fax: (907) 465-5070

THE IMPORTANCE OF UPDATING ALASKA'S WATER QUALITY STANDARDS [1]

October 6, 1992

INTRODUCTION:

The federal government, through the Clean Water Act, requires all states to create and periodically update Water Quality Standards. These standards establish allowable limits in all natural waters for pollutants that result from human actions. The Clean Water Act requires all states go through a formal review process every three years; commonly referred to as the Triennial Review. Alaska began the present Triennial Review in 1990, prior to the change of Administration.

Alaska has had water quality standards for 40 years, predating both statehood and the creation of the Department of Environmental Conservation (DEC). The first Water Quality Standards were produced in 1952 in a joint effort with the Northwest states and British Columbia. DEC inherited the Standards when the agency was created in 1971. Since that time, the State has undergone periodic revisions to those Standards.

Alaska's Water Quality Standards are one of the most important parts of our State's environmental protection programs. They have a significant impact on communities, businesses and individuals. They have a direct day-to-day effect on all Alaskans.

The water quality standards revision process deals with complex, technical issues. The standards in part involve ongoing scientific research and as such are often controversial. Some questions related to health risk may be decades away from final resolution.

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1. Paper prepared for the Alaska State Chamber of Commerce Convention, by John A. Sandor, Commissioner, Alaska Department of Environmental Conservation, at Juneau, Alaska on October 6, 1992.

THE TRIENNIAL REVIEW PROCESS:

This process is intended to update the standards and incorporate the "latest" scientific findings in the water quality field. The Triennial Review has several phases: first, a public comment period to solicit proposed modifications; second, preparation of draft revisions by DEC; third, public notice and hearings on the draft revisions; fourth, Departmental adoption and certification by the Attorney General and the Lieutenant Governor; and fifth, review and approval by the Environmental Protection Agency (EPA). If EPA disapproves the State's proposed Water Quality Standards, they can go through rule making and adopt federal standards for the state.

CRITERIA FOR AQUATIC LIFE:

A 1987 amendment to the Clean Water Act requires each state to adopt criteria for EPA's toxic "priority pollutants". This applies to two different sets of criteria -- first, criteria to protect aquatic life; and second, criteria to protect human health. Alaska some years ago adopted EPA's aquatic life criteria.

It is important to note that THERE IS NO PROPOSAL OR INTENT TO CHANGE THE AQUATIC LIFE CRITERIA. These provide a fundamental and sound level of protection for all of Alaska's waters. These are the fundamental standards that protect not only fish and shellfish, but the entire freshwater and marine ecosystems. They are the basic standards applied in wastewater discharge permits. The Governor has expressly directed that these standards not be weakened.

CRITERIA FOR HUMAN HEALTH:

We are now proposing adoption of new human health criteria; those for dioxin, chloroform and arsenic. As some of you know, if any state does not adopt their own human health criteria, EPA will impose criteria through federal regulation called the National Toxics Rule, issued in draft form last November. We believe it is important for Alaska to adopt human health criteria as a part of this Triennial Review process.

Human health criteria for carcinogenic pollutants protect humans who are exposed by drinking contaminated water or eating contaminated fish and shellfish over a 70-year life span. They are a completely new layer of standards, and apply only when they are more stringent than aquatic life criteria. Human health criteria can only make existing standards more stringent.

Nonetheless, there are significant issues with respect to human health criteria. These include the cancer "risk level" (one in 100,000 or one in one million), fish consumption rate, bioconcentration factor, and cancer potency factor.

Dioxin- Dioxin is a particular concern. Currently, no federal or State criteria exist for dioxin in marine waters. With the adoption of State human health criteria, any discharge of materials containing dioxin will be limited for the first time.

DEC believes the cancer risk level proposed for dioxin, one-in-100,000, is an acceptable risk. The overall lifetime risk of cancer in the U.S. is roughly one in four. This means 25,000 out of every 100,000 citizens may contract cancer. Adding a one in 100,000 risk from exposure to dioxin would raise the overall cancer risk level to 25,001 per 100,000. EPA has approved dioxin criteria at the level proposed, 1.2 parts per quadrillion, for at least ten other states.

Arsenic- Arsenic is another complex issue. The DEC recognizes the relatively high toxicity of inorganic arsenic, while at the same time acknowledging that fish contain, for example, the organic form of arsenic that has negligible toxicity. The DEC does not believe there is a significant exposure pathway to arsenic toxicity for humans consuming fish. However, we will discuss this with EPA and Food and Drug Administration technical staff.

Mixing Zones- The mixing zone is a volume of water around an industrial discharge in which water quality criteria may be exceeded. Mixing zones have been authorized in our regulations since 1979 and are common practice nationally. We have received some excellent suggestions for clarifying this language, and our professional staff is considering these suggestions.

Waters of the State- This definition establishes what types of waters are subject to the water quality standards, and which waters are exempt -- namely ponds, lagoons and impoundments authorized to be used as waste treatment facilities where construction and operation are approved by the Department by permit or plan review. Again, we have received suggestions for improving this language, and those are also being considered.

OTHER ISSUES:

The proposed revisions address other important issues that merit study. These include new provisions for natural pollutant levels and whole effluent toxicity, and modifications to existing criteria for sediment, fecal coliform bacteria, color, total hydrocarbons, and Alaska-specific criteria. The Department would be pleased to receive and address any concerns anyone may have regarding these proposals.

PUBLIC PROCESS:

The State is conducting this public review in an open manner. Because of the complexity of the issues, and the impact on all Alaskans, additional time for comment has also been granted.

This Triennial Review process began in 1990. The Department has communicated widely with interested parties from communities, industry and environmental groups. Department staff prepared eight questionnaires on potential revision topics and distributed them to a "working group" list of about 80 individuals, inside and outside of DEC. Issue papers were also prepared that addressed every major topic in the proposed revisions. These were then circulated to working group members prior to the public review period.

The present public review period process began July 1. Because of the level of interest in this issue and requests for extension of time, DEC extended the end of the comment period from August 10 until September 30 for a total of 92 days. The Department widely publicized the proposed regulations by newspapers, radio and other media announcements. Public hearings were scheduled in various parts of the state. A special teleconference in 15 locations was also conducted.

Finally, the Department extended the public comment period for another month (to October 31, 1992). This extension will also enable the DEC to consider technical proposals for change by the Environmental Protection Agency and others during this same period of time. The Department has been assured our time extension will not jeopardize the State's ability to proceed with the development of human health criteria through imposition of the Draft National Toxics Rule on the State of Alaska in the midst of our Triennial Review.

SUMMARY:

In conclusion, let me emphasize two points. First, failure on the part of the State to promulgate "reasonable" standards will result in federal imposition of standards that DEC's analysis finds insupportable for the level of stringency proposed. As a note of interest, there are 14 other states and territories which, like Alaska, are still doing the research that leads to the selection of defendable human health standards. Nineteen states, having completed these analyses, have selected the 10-5 number (one in 100,000 risk level) that Alaska proposes (23 states have chosen the 10-6 number).

The second point is that the State has a significant number of major water permits under development and the permittees should know what standard is being proposed. Undue delay in the adoption of a standard could result in the imposition of federal standards on our state, and effectively deny Alaska the opportunity to develop standards already in place in many other states.

Because of the public review process underway, the citizens of Alaska will have had a significant voice in the final outcome. That is good.

Our intent is to develop effective Water Quality Standards and Regulations based on sound scientific analyses. At the same time, the standards should protect Alaska's unique environment and afford Alaskans the opportunity to safely develop new revenue sources. The Department is attempting to strike a balance between environmental protection and economic opportunity.

Each one of us will likely have different views on what is the best balance between environmental protection and economic opportunity. I believe that by working together, the people of Alaska can protect water quality and other environmental values. At the same time, we can strengthen Alaska's economy so that environmental health problems like the water and sanitation conditions of rural Alaska can be solved. By protecting the environment and strengthening the economy, we will be able to improve the quality of life for all Alaskans.

Your views and those of the public at large will enable us to achieve that balance.

Thank you for the opportunity to participate in your conference.

UNITED STATES ENVIRONMENTAL PROTECTION AGENC
REGION 10
SEATTLE, WASHINGTON 98101
September 25, 1992

1. Fairbanks N.S.B. Resident/Boro enhanced I 50/50 chan.

REPLY TO ATTN OF: AOO/A

MEMORANDUM

SUBJECT: Weekly Significant Issues

FROM: Alvin L. Ewing
Assistant Regional Administrator

TO: John A. Sandor, Commissioner
Alaska Department of Environmental Conserva

COMPLETED

ALASKA WATER QUALITY STANDARDS - HAINES HEARING

- The public expressed their outrage and frustrati getting up and waling out of the hearing prior t[illegible] the public testimony, all 80 or so in the audience
- The public was frustrated over a variety of issues, mostly concerning issues of public policy for which they expected policy level agency participation
- The public in this instance had researched many of the references quoted in ADEC issue papers, contacted national experts on various issues, had done additional research at the technical and policy level; apparently there are a number of people who are well educated professionals turned fishermen
- The public repeatedly indicated concern that ADEC has been so busy defending its proposals that ADEC is sending the message that they are intransigent about considering an open discussions on the pros and cons of the issues and that decisions have already been made; opportunity for the public affecting these issues has the appearance of being limited
- Strong message that the public has not been asked to face this type of risk discussion in the past and the public is unwilling to accept that ADEC needs to fast track such important issues with such long term potential impacts
- Strong message that even when folks don't understand the words in the issue papers, they certainly understand the tone and attitude of bias which is exhibited in some of the papers
- The public asked many times why ADEC is extremely protective on the PSP issue, to the point of causing cancellations of contracts because of the labelling, but ADEC is unwilling to apply the same degree of protection through the water quality standards
- Many were concerned that the process for public input will be cut off, that ADEC will not have a public process to

address the issues raised by the public and that ADEC will go ahead and adopt their proposals regardless of the public comments; this is apparently fostered to some extent by ADEC's public defense of their positions as opposed to being open for discussion

- Display of the public trying to impact a public policy decision and the process of making that decision and feeling shut out; one person made a comment to the effect that outrage occurs when the public doesn't believe they are getting the straight scoop; clearly the public doesn't believe ADEC did a fair, unbiased evaluation and provided the reasons 'why' it came to the conclusions it did. (Deborah Verrelli, 907-586-7619)

OUTREACH

None

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SEATTLE, WASHINGTON 98101
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OUTREACH

None

Your views and those of the public will enable us to achieve that balance.

Thank you for the opportunity to appear before this committee.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

NOV 09 1992

Reply To
Attn Of: WD-139

Commissioner John Sandor
Alaska Department of Environmental Conservation
410 Willoughby Avenue, Suite 105
Juneau, Alaska 99801-1795

Dear Commissioner Sandor:

We have been notified by Environmental Protection Agency (EPA) headquarters that Administrator Reilly is expected to sign the proposed "Toxic Rule" (58 FR 58420) no later than December 1, 1992. In anticipation of rule publication, we would like to offer you an opportunity to designate the risk level that will be used as a basis for promulgating human health carcinogen criteria for Alaska.

When EPA issued the draft Toxic Rule last November, it applied a 10^{-6} risk level for all affected states. Subsequent discussions with the Office of Management and Budget led EPA to modify the rule to reflect state preference. In ascertaining Alaska's state preference, EPA used your recently proposed water quality standards (WQS) regulations for dioxin and chloroform. These proposed criteria were based on a 10^{-5} risk level.

Using this kind of evidence to identify state preference is consistent with national practice. We discussed this with members of your staff and they agreed that this approach was appropriate. As a result of this decision, the draft Toxic Rule currently includes a 10^{-5} risk level for Alaska.

In light of your state's recent decision to extensively review and possibly reopen for public comment your proposed WQS regulations, we would like to confirm that your preferred risk level of 10^{-5} has not changed. If your preference has changed, and we promptly receive a letter from you indicating an alternate preferred risk of 10^{-6} or higher, we can change the risk level in the Toxics Rule for Alaska.

The window of opportunity for modifying the Toxics Rule is narrow. As I indicated, above, the Rule is expected to be finalized December 1, 1992. All paperwork should be final well before this date in order to obtain necessary signatures in a timely manner. Although EPA headquarters is not able to give us

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To Dale Sturdevant | From Sally Marquis
Dept. ADEC | Phone # 206 553 2116
Fax # 907 465 5274 | Fax # 206 553-0165

a firm date within which changes can be made to the rule, we are certain that a letter received by November 16, 1992 will meet the deadline. After the Rule is published, we anticipate that there may be an additional opportunity of 30 days to make certain further changes.

We will fax this letter to your office today. If we receive a response from you, we will fax it to our headquarters office immediately. If we do not hear from you, we will assume that the 10^{-5} risk level is acceptable to your state and will promulgate the rule on that basis.

Thank you for your attention to this matter. Please call me if you have any questions.

Sincerely,

Charles E. Findley
Director, Water Division

United States
Environmental Protection
Agency

Region 10
1200 Sixth Avenue
Seattle WA 98101

Alaska
Idaho
Oregon
Washington

EPA

OCT 05 1992

Reply To
Attn of: WD-139

MEMORANDUM

SUBJECT: Comments to Proposed Water Quality Standards Regulations

FROM: Sally Marquis Sally
Water Quality Standards Coordinator

TO: Dave Sturdevant
Water Quality Standards Coordinator

Attached are Region 10's draft comments to the Department of Environmental Conservation's proposed water quality standards regulations. Normally, we would wait to send out comments until the close of the public comment period. But, in anticipation of our discussions over the next month, we felt that our concerns might be more easily resolved if both parties fully understood our position. We are hoping that we can resolve many of these concerns during the remainder of the public comment period. We will provide our final comments to you at the close of the comment period.

DRAFT
10/5/92

Comments to Alaska's Proposed Water Quality Standards

17 AAC 70.010(c) Natural characteristics of water

The state is proposing to administratively approve natural levels as applicable criteria where ambient levels exceed criteria 'naturally'. We can appreciate this need. However, this regulation must be applied only in the few situations where conditions are truly natural, that is not human caused. Ambient waters affected by a discharger should not automatically through operation of this clause, become the default criteria. Please define 'natural' in your regulations so as to clearly exclude human caused pollution. The state of Washington, for example, is currently proposing a definition of natural in its water quality standards (WQS) regulations as follows:

> "natural conditions" or "natural background levels" means surface water quality that was present before any human-caused pollution.

18 AAC 70.020(b) Fecal coliform

The state is proposing adoption of a bacterial standard based on a 1976 federal criteria recommending 200 FC/100 ml. EPA has replaced the 1976 criteria with one recommending the use of *E. coli* or enterococci.

We have the following concerns with this proposal.

1) The proposed standard is not consistent with federal criteria. EPA recommended the use of fecal coliform bacteria as indicator organisms until 1986, when the Agency published revisions recommending use of *E. coli* or enterococci. The revisions were based on studies showing significantly better statistical correlations between the incidence of swimming-related gastroenteritis and either *E. coli* or enterococci at fresh water beaches and enterococci at marine beaches than between gastroenteritis and total or fecal coliform.

The agency's new bacterial criteria superceed previous criteria. Therefore, if the state wishes to adopt the 1976 criteria, it must present a scientifically defensible argument that the proposed criteria are fully protective of recreational uses. We agree with the state that this might better be considered when more time allows, perhaps later during the triennial review.

3) Alaska Department of Environmental Conservation (ADEC) is currently proposing a criterion limiting less than 10% of samples to exceed 400 FC/100 ml. Is the illness rate for this level of fecal contamination acceptable given that 200 FC/100 ml results in an estimated 19 illnesses/1000 recreational contacts with the water.

4) The table attached to the Alaska issue paper listing state standards is considerably out of date. I have attached a 1992 summary. For your information, the summary includes the following observations: 38 states rely on the 1968 200 FC/100 ml standard; six states and one trust territory have adopted *E. coli* standard for freshwater; eight states, one tribe and two trust territories have adopted enterococci standards for fresh and/or saline waters; and eleven states/territories have fecal and/or total coliform standards more stringent than 200 FC, including Idaho (50), California (20 for selected waters), Oregon (14 for marine waters), and Washington (50 for Class AA and lake waters, 100 for Class A waters, and 14 for marine waters).

18 AAC 70.020(b) Petroleum Hydrocarbons, Oils, and Grease

The state proposes to eliminate the total hydrocarbon (TH) numeric standard of 15 ug/l. The existing TH standard has been acknowledged by ADEC to be "problematic due to the inappropriate method of measurement and has been little used in practice" (p. 10, TH issue paper). The problems with the standard are essentially two-fold: 1) the scientific basis for the numeric limitation is flawed, and 2) the analytical method for measuring compliance with the standard is inappropriate. We believe that these problems should be the impetus for revising, rather than discarding, the numeric standard. Each problem is addressed, below.

1) The scientific basis for the numeric limitation of 15 ug/l for TH, derived from the total aromatic hydrocarbon (TAH) standard, is flawed. Toxicity testing data for a sensitive Alaskan species was used to develop the TAH standard. An average lethal value of 1.0 ppm was measured and the now outdated safety factor of 100:1 was applied. The TAH standard of 10 ug/l was then calculated.

The TH standard was in turn derived from the TAH standard using a TH:TAH ratio of 1.5:1. However, this ratio was inappropriately low, generating a very conservative TH standard. The 1.5:1 ratio is generally accurate when comparing the concentrations of soluble TH and TAH in a given solution. However, the ratio does not apply when all phases of TH (soluble, dissolved, and particulate) are

compared to TAH. As ADEC noted in the position paper, the ratio of all phases of TH to TAH in Alyeska's effluent is greater than 560 to 1. These numerous and complex technical difficulties render the TH standard inaccurate, but not inoperative altogether.

2) A further complication with the existing TH standard is the stipulated analytical method. The method required for measurement of the TH standard is method 503B (partition infrared). The detection limit of method 503B is 200 ppb which is significantly higher than the TH standard of 10 ppb.

Given the above difficulties with the standard it is appropriate that the numeric standard be revised, but NOT eliminated as has been proposed. The methodology for derivation of the standard should be reviewed and a more scientifically defensible limitation should be included in the Alaska WQS revisions. A first step may be to review the TH standard present in other state standards.

In closing, we suggest you revisit the TH standard to derive an appropriate replacement rather than to eliminate the it altogether. It is important to have a scientifically defensible and enforceable standard. Our office would be pleased to offer assistance in this endeavor.

18 AAC 70.020(b) Sediment

The state is proposing to substitute "settleable solids" for "sediment" and to add, "as measured by the volumetric Imhoff cone method." It suggests in its issue paper that turbidity and settleable solids together provide adequate protection and that the Imhoff method offers advantages of low cost and ability to be measured on-site. We offer the following concerns with this proposal (please see the attachment "Comments on proposed change in Alaska's water quality standard (WQS) for sediment" from Burney Hill to Sally Marquis, for further information):

1) Sediment is generally thought to incorporate settleable solids and total suspended solids (see 18 AAC 70.110(37). The proposed language essentially removes total suspended solids from consideration in the sediment criteria.

There are circumstances under which a standard for total suspended solids is important to the protection of the biotic integrity of receiving waters. While settleable solids have particularly significant impacts in the suffocation and burial of life on the bottoms of water bodies, and turbidity has impacts on primary production and visual acuity, suspended solids may affect aquatic life

(especially eggs, larvae, filter feeding invertebrates and fishes) in ways which would not be protected by standards for settleable solids and turbidity. Perhaps 10 percent of the environmental impacts involving the three parameters could be better controlled with the support of a WQS for suspended solids. Thus, a WQS criterion for total suspended solids should be an integral part of a standard for sediments in the water column.

2) Although the state said in its issue paper that "total" methods are time-consuming and expensive relative to the Imhoff cone, it did not expand on this point to give the reviewer sufficient information to weigh whether this advantage is great enough to warrant omitting total suspended solids.

3) Alternative language might be, "No significant increase in concentrations of sediment, including both settleable solids and total suspended solids, above natural conditions", without explicit reference to an analytical method. The term "significant" replaces the proposed term "measurable" in providing, along with state mixing zone policies, professional discretion in the analysis of site-specific conditions and variability. If you use the term significant, we would suggest providing a definition so as to minimize ambiguity in applying the standard.

18 AAC 70.020(b) No Observed Effects Concentration

We believe that it is appropriate for the state to move away from the .01 times the 96 hour LC50 to the no observalbe effects concentration (NOEC) approach to limit whole effluent toxicity. Because proposed language uses "based on the NOEC of chronic toxicity as determined through toxicity testing..." freely, it is essential that ADEC spell out in implementation guidance exactly how this will be done. (Note: it must be understood that the NOEC protocols are very species specific and few of the test species are endemic to Alaska.)

Related to this provision, we also strongly encourage the state to adopt a narrative free from criterion for toxics. This general provision provides the state with the authority to regulate any chemical/toxic pollutant which threatens human health or the environment. This provision is necessary as a basis to regulate toxics where the state has not adopted a numeric criterion and there is not an adequate basis to calculate a NOEC. In addition, the free from criterion can be used to protect human health where there is no state-adopted numeric criterion. (The NOEC approach proposed by the state does not apply to human health protection.)

18 AAC 70.022 Human Health Criteria

Application of criteria

The proposed language states that the "following water quality criteria for the protection of human health apply to waters where the department determines that there is a reasonable expectation of human exposure through ingestion of contaminated water and aquatic life." The regulations then list criteria for arsenic, dioxin and chloroform. We have two concerns with this language:

1) One could misinterpret this language to assume that these are the only human health criteria adopted by the state. This is clearly not the case; Alaska has adopted human health criteria for non-carcinogens.

2) The proposed regulation states that application of these criteria is at the department's discretion. This is vague. The state should clearly apply the criteria to specific uses in its regulation as it has other criteria. Furthermore, to be consistent with 303(c)(2)(B) and EPA's proposed Toxic Rule, the state should apply the criteria using the same "rules" followed by EPA in writing the requirements for the Toxic Rule. For example, "In the absence of such an approved State determination (a use attainability analysis), EPA has proposed fish consumption criteria for all aquatic life segments." (56 FR 58432).

Groundwater

We suggest clarifying the proposed narrative to identify which human health criteria apply, for example, criteria for the consumption of water plus organisms or for consumption of organisms only.

Arsenic

To achieve compliance with Section 303(c)(2)(B) of the Clean Water Act (CWA), EPA requires states to adopt EPA's human health criteria using a risk level of 10^{-5}, 10^{-6}, or 10^{-7} or to present other scientifically defensible numbers. Alaska has proposed numbers that it considers scientifically defensible: 50 ug/l for water supply and 190 ug/l for other human health protection categories for freshwater, and 36 ug/l not to be exceeded on the average over a four day period for saltwater. We do not believe that the state's position adequately presents a scientifically defensible position. Our concerns are presented, below. Please

refer to the attached memo by David Frank for additional comments.

(A) The state reasons that because arsenic occurs only in a predominantly non-bioavailable organic form in fish, fish consumption should not be considered in criterion development.

1) The available scientific data do not prove that arsenic is completely absent from fish and other seafood such as shellfish. In fact, the issue paper itself refers to a Canadian study which indicates that freshwater fish contain 10% inorganic arsenic.

Also, it is likely some shellfish (e.g., bivalves and some mollusks) are less able to convert inorganic arsenic to the organic form because they lack the liver-like organ needed for detoxification. In support of this are the results of a study done at the University of Washington in which urinary inorganic arsenic was measured in human subjects after eating mussels. The results of this showed that a large percentage of the arsenic found in the urine of these test subjects is in the low molecular weight form and not in the high molecular weight species (e.g., arsenobetaines) expected from seafood.

2) Very little is known about what happens to seafood (organic) arsenic once it enters the human gastrointestinal tract. The stomach is very acidic and contains enzymes specific for degrading proteins. Therefore, it is conceivable that the form of arsenic available for absorption in the gastrointestinal tract is not the organic arsenic species that was originally ingested.

(B) The state cites epidemiological studies in Lane County, Oregon and Fairbanks, Alaska which do not show toxicological effects even at ambient levels that exceed EPA's drinking water standard (Maximum Contaminant Level, or MCL). It concludes that the lack of toxicological effects in Fairbanks is evidence that EPA's human health criteria are too stringent and that a freshwater criterion based on a MCL is adequately protective.

1) The issue paper questions the validity of the Taiwan data because of (1) genetic differences between the Taiwanese and Americans, and (2) the low protein diet of the Taiwanese. These criticisms are not supported by data from other populations, including the Germans and the Mexicans.

EPA's cancer potency factor for ingestion of arsenic is based upon data of increased skin cancer incidence in people exposed to arsenic contaminated drinking water in Taiwan. An increased cancer risk as a result of ingestion of arsenic in drinking water and medicines has also been shown in

Mexico and Germany. EPA used the Taiwanese studies to calculate the cancer potency factor because it was the best of all of the studies. However, when EPA compared the German and Mexican data to the Taiwanese data they concluded that the German data, and especially, the Mexican data were consistent with EPA's potency number calculated using the Taiwan data.

There is no data to suggest that the Germans or the Mexicans are genetically different from people in the U.S. Also, there is no evidence that the German and Mexican populations studied had diets low in protein.

2) The issue paper uses negative results from epidemiological studies done in the U.S. to question the Taiwanese data. This issue was addressed by EPA's Scientific Advisory Board (SAB) in their review of arsenic issues related to the required development of a new Drinking Water Standard by EPA. The SAB concluded that "part of the basis for the absence of association in the U.S. studies is insufficient statistical power, given the magnitude of the exposure of the U.S. cohorts". In other words, the numbers of people and/or the levels of exposures in the U.S. studies were too low to be able to detect an increased cancer risk.

3) Numeric standards for contaminants are different under the Safe Drinking Water Act and the CWA. MCLs are based on feasibility considerations, including the availability of technology to achieve the regulatory level and the cost of such treatment. Standards/criteria developed under the CWA are based strictly on the basis of health effects, and do not consider feasibility considerations. The methods used to derive the human health values under both Acts are generally considered protective of human health.

EPA's proposed "Toxics Rule" (56 FR 58420) has identified the following guideline for applying its human health criteria to public water supplies: "If the State has public water supplies where aquatic life uses have not been designated,... the "water + organisms only" criteria in Column D(I) ... are promulgated." To be consistent with this guideline, the state needs to revise its proposed drinking water supply criterion of 50 ug/l based on a drinking water MCL, to 0.018 ug/l, a human health criterion assuming consumption of "water + organisms."

The state could argue that applying a MCL to a water supply use is reasonable, given that fish consumption is not associated with the use. However, such an application would be appropriate only in those waterbodies where the state has clearly demonstrated that no potential for fish consumption exists.

Like EPA's human health criteria, MCLs are based on risk assessments and have risk values associated with them. The drinking water MCL for arsenic of 50 ug/l has an associated cancer risk of 10^{-3}. A new study published this summer in the journal *Environmental Health Perspective* (volume 97, pg. 259-267), "Cancer Risks from Arsenic in Drinking Water", authored by experts including researchers from biomedical, environmental and epidemiological university departments, concluded that at 50 ug/l, "the lifetime risk of dying from cancer of the liver, lung, kidney, or bladder from drinking 1 L/day of water could be as high as 13 per 1,000 persons", or 10^{-2}.

In 1962, the Public Health Service published drinking water standards. The documentation on arsenic in this publication states, "The U.S. Public Health Service Drinking Water Standards for 1946 established an arsenic limit of 0.05 mg/l. In light of our present knowledge concerning the potential health hazard from the ingestion of inorganic arsenic, the concentration of arsenic in drinking water should not exceed 0.01 mg/l and concentrations in excess of 0.05 mg/l are grounds for rejection of the supply."

EPA is publishing proposed new drinking water regulations for arsenic next summer. Information from studies on internal cancers will be used to reexamine the arsenic MCL. Although the regulatory language will not, of course, be known until the rule is final, we expect the arsenic MCL to be much lower than 50 ug/l. We also expect the rule to assign arsenic a maximum contaminant level goal close to or equal to zero. (This level reflects the level of contamination where "no known or anticipated adverse effects on the health of persons occurs and which allows an adequate margin of safety.") In light of the anticipated changes, it may be appropriate for the state to wait for rule completion before endorsing a MCL value.

(C) The state suggests that trivalent, inorganic arsenic rather than total arsenic should be regulated. It also states that this form of inorganic arsenic is not being discharged to the Alaskan environment as it is in other areas of the U.S.

1) Arsenic has an extremely complicated chemistry. The state's emphasis on trivalent arsenic as the only inorganic form of concern is a serious oversimplification of arsenic solubility, toxicity, and oxidation-reduction reactions.

Although <u>acute</u> toxicity studies indicate that trivalent forms of arsenic are more toxic than the pentavalent form, this may not be the case with longer term chronic studies. In fact, exposures to the both the trivalent and pentavalent

forms occurred in the people involved in several of the studies of carcinogenicity. In addition, inorganic arsenic (+5) can be interconverted in the blood of humans with the (+3) species, which is then methylated.

Both pentavalent and trivalent forms are soluble and toxic. Conversion of one form of arsenic to another by reduction or oxidation may occur in the environment. Although studies of inorganic forms of arsenic indicate that pentavalent arsenic is less soluble and less toxic than trivalent arsenic, one should neither conclude nor imply, that pentavalent arsenic is therefore insoluble and non-toxic.

Emphasis on trivalent arsenic alone in waste discharge regulation would neglect the potential for redox reactions when wastewater or a receiving stream enters reducing environments. Consequently, total arsenic would be the important parameter to regulate for adequate protectiveness.

2) The state's argument that trivalent arsenic is not being discharged to the Alaskan environment has a weak basis. We agree that there are no smelters operating in Alaska. However, many other mining facilities exist or are proposed for extracting, grinding, and treating ore in order to mobilize and concentrate metals. Ore processing certainly can modify arsenic speciation.

(D) The state argues that because the proposed saltwater criterion of 36 ug/l is lower than the drinking water MCL of 50 ug/l, and that fish are not a significant source of inorganic trivalent arsenic, the aquatic life trivalent criterion of 36 ug/l should be adopted as the human health saltwater criterion.

1) See above for our position that fish may be a significant source of inorganic arsenic.

2) See above for our position that the complexity of arsenic speciation argues for a human health criterion based on total arsenic.

3) The state proposes to protect human health based on a number designed to protect aquatic life. What is the rationale for this approach?

(E) The state proposes for adoption 190 ug/l for human health protection in freshwater use classes other than water supply.

1) Although no supporting argument is presented, we assume that this criterion is based on EPA's aquatic life freshwater chronic criterion for trivalent arsenic. If so, see above for our arguments that a total arsenic criterion is more reasonable, that fish consumption should be

considered and that protecting human health based on aquatic life protection is questionable.

(F) In conclusion, because of scientific uncertainties regarding the toxicology of arsenic, its chemical complexities, anticipated new rulemaking, and the relatively high intake of fish and other seafood in Alaskan diets, we recommend adoption of EPA's human health criteria.

Dioxin

EPA's proposed "Toxics Rule" (56 FR 58420) has identified the following guideline for applying its human health criteria to public water supplies: "If the State has public water supplies where aquatic life uses have not been designated,... the "water + organisms only" criteria in Column D(I) ... are promulgated." To be consistent with this guideline, the state needs to revise its proposed drinking water supply criterion of 30 parts per quadrillion (ppq) based on a drinking water MCL, to a human health criterion assuming consumption of "water + organisms."

The state could argue that applying a MCL to a water supply use is reasonable, given that fish consumption is not associated with this use and that the avenue of exposure for dioxin via water is minimal. However, such an application would be appropriate only in those waterbodies where the state has clearly demonstrated that no potential for fish consumption exists.

The state has not designated human health dioxin criteria for the remaining fresh water uses. The state must designate criteria for these uses to be in compliance with Section 303(c)(2)(B). We believe that these should be designated assuming consumption of "organisms only."

The proposed human health criterion for marine waters is 1.2 ppq. As you are aware, EPA has approved state dioxin criteria ranging from 0.00051 ppq to 1.2 ppq. Criteria of 1.2 ppq have been approved for the states of Virginia, Maryland, Georgia, South Carolina, and Alabama. Several other states have adopted a criteria of 1.0 ppq (Mississippi, New Hampshire, New York, Tennessee.) However, we have two concerns relating to the proposed criterion, as follows:

1) The proposed state standard is based upon a fish consumption rate of 6.5 grams per day. While the majority of states with EPA-approved human health criteria have based them on this consumption rate, the Alaska Department of Fish and Game has collected information specific to Southeast Alaska which indicates that residents eat significantly more seafood than this amount. In addition, certain groups of individuals, such as Native Americans, appear to eat much

larger amounts of fish. A recent survey of fish consumption by Native Americans in the Columbia River basin found that adult members of one tribal group (the Nez Perce Tribe) eat an average of 80 grams of fish per day (see attached memo from Harold Sheppard of the Columbia River Intertribal Fish Commission dated April 5, 1992). The survey also indicated that Nez Perce children consume an average of 20 grams of fish per day. The 90th percentile consumption rate for Nez Perce Tribal members is 435 grams per day.

The following states used fish consumption rates greater than 6.5 grams per day in deriving dioxin criteria:

State	Consumption Rate (grams per day)
Arizona	7.5
Delaware	37
Hawaii	19.9
Illinois	20
Louisiana	20
Minnesota	30
Texas	10/15 (freshwater/saltwater)
Wisconsin	20

These rates were primarily derived based upon consumption of fish by recreational fishermen.

2) The State of Alaska, like EPA, has no dioxin criterion for the protection of aquatic life in marine waters. Thus, if the state adopts a criterion of 1.2 ppq for the protection of human health, that will be the only criterion used in the development of dioxin limitations required to meet WQS. (This is likewise true for all the states having adopted dioxin criteria of 1.2 ppq.)

Attached are several documents concerning the effects of dioxin on fish and wildlife. We encourage the state to consider this information in the context of protection of the use described in 18 ACC 70.020(2)(C) for marine waters ("Growth and propagation of fish, shellfish, other aquatic life, and wildlife").

- Declaration of Dr. Steven P. Bradbury, U.S. EPA, dated February 12, 1992. This document was an enclosure to a letter to the U.S. Fish and Wildlife Service (FWS) in which EPA determined that a dioxin concentration of .013 ppq in the Columbia River would not adversely affect bald eagles. This information was sent to the FWS as part of a formal consultation under section 7 of the Endangered Species Act concerning the establishment

of a total maximum daily load for dioxin in the Columbia River Basin.

- A publication by Paul Mehrle et al. entitled, "Toxicity and Bioconcentration of 2,3,7,8-Tetrachlorodibenzo-dioxin and 2,3,7,8-Tetrachlorodibenzofuran in Rainbow Trout." Mehrle and his co-workers found that trout exposed to 38 ppq of dioxin for 28 days, followed by a depuration period of 28 days, suffered 45% mortality. This concentration (38 ppq) was the lowest concentration tested, thus a no-observable-effect concentration (NOEC) could not be calculated.

- A publication by Phillip Cook et al. entitled, "_____." This publication appeared in the proceedings of the 1990 Banbury conference on dioxin. The publication contains information on the effects of dioxin on aquatic life. Of particular note were the results of maternal transfer studies on Lake Trout, which indicated a NOEC of 30 parts per trillion (ppt) for Lake Trout eggs. Related studies indicated a bioconcentration rate of 180,000 (this rate was specific to Lake Ontario).

- A publication by Barry Walker, entitled "_____." This publication provides dose-response data for aquatic organisms exposed to dioxin.

- Draft dioxin criteria developed for the protection of birds and mammals as part of EPA's Great Lakes Water Quality Initiative. The draft criteria are 0.14 ppq for the protection of birds and 0.0085 ppq for the protection of mammals. This analysis was provided to the FWS as part of EPA's Endangered Species consultation for the Columbia River dioxin total maximum daily load.

In conclusion, while the proposed criterion for protection of human health is equivalent to those approved by EPA in some other states, concerns about the potential impacts of this concentration on fish and wildlife lead us to encourage ADEC to evaluate whether protection of aquatic resources and wildlife should be considered as part of the current standards revision. We suggest you contact Carol Shuler of FWS for further information (503/231-6169). Her address is 2600 S.E. 98th Ave., Suite 100, Portland, Oregon, 97266.

Chloroform

The state is proposing application of EPA human health criteria for all uses except drinking water supply at 4700 ug/l

(using a 10^{-5} risk level). For drinking water supply, the state is proposing to adopt EPA's MCL of 100 ug/l for total trihalomethanes which include chloroform, and applying it to chloroform.

It is appropriate to apply EPA's numbers as proposed for all uses expect drinking water supply. We have the following concerns with the proposed drinking water criterion:

1) EPA's proposed "Toxics Rule" (56 FR 58420) has identified the following guideline for applying its human health criteria to public water supplies: "If the State has public water supplies where aquatic life uses have not been designated,... the "water + organisms only" criteria in Column D(I) ... are promulgated." To be consistent with this guideline, the state needs to revise its proposed level of 100 ug/l to 5.7 or 57 ug/l at 10^{-6} and 10^{-5} risk levels, respectively.

The state may argue that using a MCL for drinking water supply is reasonable, given that fish consumption is not associated with the use. However, application of this criterion to specific waters would be reasonable only where the state has clearly demonstrated that there is no potential for fish consumption.

2) Numeric standards for contaminants are different under the Safe Drinking Water Act and the CWA. The methods used to derive the human health values under both Acts are generally considered protective of human health. (Like EPA's human health criteria, MCLs are based on risk assessments and have risk values associated with them. At 60 ug/l of chloroform, for example, the MCL risk level is 10^{-5}.) But MCLs also incorporate feasibility considerations, including the availability of technology to achieve the regulatory level and the cost of such treatment.

2) The drinking water standard of 100 ug/l for Total Trihalomethanes (TTHMs) is currently undergoing negotiated rulemaking (beginning September 28, 1992). The revision may include specific levels for each of the four trihalomethanes as well as a total level for the sum of the trihalomethanes found. Specific levels for each THM and the total are not yet known.

At the present time only public water systems serving greater than 10,000 persons are subject to this regulation. The new regulation will probably be applicable to all public water systems. The proposed regulation is currently scheduled to be published in the federal register in June 1993. The final rule is scheduled for promulgation in June

1995 and the effective date of the regulation would be 18 months after promulgation, or January 1997.

18 AAC 70.023. Chronic Toxicity of an Effluent

We support the proposed change. However, effluent toxicity is not typically "measured" at the boundary of a mixing zone, and a measurement in the receiving water cannot reliably determine compliance. Therefore, we suggest replacing "measured" in the first sentence of this section as follows:

> "The chronic toxicity of an effluent discharged to state water, either at the point of discharge or at the boundary of a mixing zone authorized by the department in a permit or certification, shall not exceed 1.0 chronic toxic unit (TUc)."

18 AAC 70.032 Mixing Zones

As outlined below, proposed mixing zone language does not alleviate EPA concerns about the lack of clear guidelines for mixing zones in Alaska. Without such guidelines, EPA and the state could experience major delays and possible conflicts in the permit issuance process.

Most NPDES permits have a need for mixing zone determinations, and the size of the mixing zone is often a source of controversy. EPA often proposes mixing zones to the state in draft permits, based on its interpretation of the standards. The state then must either certify the proposed mixing zones or make a different determination. Unfortunately, the lack of a straightforward guideline causes major delays in permit issuance; new source permittees are particularly frustrated with the delays.

EPA does have the authority to issue permits without final state 401 certification if certain time constraints are exceeded. In some instances of major delays, EPA has made this determination and issued permits without waiting for state certification. The final permit then reflected EPA's interpretation of an appropriate mixing zone.

EPA would like to avoid this breakdown in cooperation and effectiveness, but believes this is possible only if the standards contain mixing zone guidelines that are clear and straightforward.

(a)(1)

> The state needs to develop some guidelines for what are "adverse effects" and "significant risk to human health".

Otherwise, the standard will be very difficult, if not impossible, to implement. The state will find itself in the position of engaging in endless debates with permittees over whether or not there will be effects, whether any expected effects are "significant," etc.

(a)(3)

The added language appears to be out of context. We suggest moving the added language to section (b)(4).

We are concerned with the statement "mixing zones applied for and granted after permit issuance...." Granting a mixing zone after permit issuance could create problems with antibacksliding or antidegradation, and added workloads associated with permit modifications.

The language in the section is a bit confusing. The statement that the mixing zone will be based on the "level of treatment defined in the permit" implies that no mixing zones will be granted after permit issuance because, if no mixing zone is specified prior to permit issuance, the level of treatment required in the permit will be sufficient to meet water quality criteria at end-of-pipe. Also, by referencing (e)(3) only, rather than all requirements under (e), an impression may be created that (e)(1) and (e)(2) are not relevant.

(e)(3)(A)

The statement "mixing zones . . . may not exceed aquatic life criteria . . ." is confusing. If, as it appears, the meaning is that water within the mixing zone may not exceed aquatic life criteria, we suggest stating that mixing zones for aquatic life are prohibited in these cases.

Is the statement, "...effluent flow is greater than 25% of the stream flow" based on upstream or downstream flow? For example, if the streamflow is 75 MGD upstream, can the permittee discharge 25 MGD, or does upstream flow have to be 100 MGD to allow a discharge of 25 MGD? The standard also should specify the flow: average, critical low, high, etc.

(e)(3)(D)

This paragraph is confusing. Does this mean, for example, if the copper in a discharge exceeds the aquatic life criterion and the turbidity is more than 5 NTU but less than 25 NTU, the permittee can't get a mixing zone for turbidity?

(Note that Option 2 (e)(3)(iv) in the discussion paper on mixing zones is also unclear. Do you intend to mean that if the natural level of copper in the receiving water exceeds the criteria, permittees are prohibited from getting mixing

zones for any pollutants? The wording under option 1 is at least more clear, in that it specifies end-of-pipe.)

A final comment is to suggest that the state add a provision prohibiting acute toxicity in mixing zones.

18 AAC 70.110(46) "Water"

The language of the definition exempts several types of waters from protection as waters of the state. The exemptions are too broad and may result in significant disagreements between the federal and state levels when dealing with specific waterbodies. For example, under your language, Silver Bay, Gastineau channel or Wards Cove might be identified as treatment systems. Therefore, the present language, leaving the decision as to what does or does not constitute waters that are covered by the CWA to the discretion of the department is not acceptable.

An example of language that would address our concern is, "...impoundments, or other surface water bodies that are ~~either~~ integral parts of wastewater treatment and disposal systems ~~approved by the department, or that are~~ designed, constructed and operated to meet the requirements of the federal CWA."

To Jay from Heather

*** ANNOUNCEMENT ***

CONCERNING REVISIONS TO WATER QUALITY STANDARDS:

Consultation Meetings, November 9-13; Formation of a Citizens' Advisory Group; Process for Completing Revisions to Water Quality Standards

Alaska Department of Environmental Conservation
November 5, 1992

On July 1, the Alaska Department of Environmental Conservation (DEC) initiated a public review and comment period on proposed revisions to the Alaska Water Quality Standards regulation, 18 AAC 70. The focus of proposed revisions is the adoption of human health criteria for dioxin, chloroform and arsenic; other significant topics also are addressed. In response to public requests, the comment period has been extended three times, and presently ends November 15. Public comments must be postmarked or submitted to DEC by Close of Business on that date.

During the week of November 9-13, the Department of Environmental Conservation will hold a series of consultation meetings with a variety of entities who have expressed interest in proposed revisions to Water Quality Standards. The purpose of these meetings is to present the status of DEC's work on revisions to standards, to discuss the formation of a citizens' advisory group, and to discuss the process proposed for completing revisions to standards, as described below.

The schedule of consultation meetings follows. The meetings will be held in the conference room on the first floor of the DEC building, 410 Willoughby Avenue, Juneau, Alaska.

Monday, November 9
1:30 - 4:30 p.m. -- Oil and Gas Interests

Tuesday, November 10
9 - 12 a.m. -- Mining Interests
1:30 - 4:30 p.m. -- [illegible] Fish Processing Interests

Thursday, November 12
9 - 12 a.m. -- Timber and Pulp Mill Interests

Friday, November 13
9 - 12 a.m. -- Municipalities
1:30 - 4:30 p.m. -- Environmental and Tourism Interests

Over 1,000 public comments already have been received. DEC expects evaluation of public comments to take at least until December 31. During that time, DEC will continue working with the Environmental Protection Agency and other sources to complete a review of technical and scientific issues contained within the comments.

United States
Environmental Protection
Agency

Region 10
1200 Sixth Avenue
Seattle WA 98101

Alaska
Idaho
Oregon
Washington

EPA

OCT 05 1992

Reply To
Attn of: WD-139

MEMORANDUM

SUBJECT: Comments to Proposed Water Quality Standards Regulations

FROM: Sally Marquis Sally
Water Quality Standards Coordinator

TO: Dave Sturdevant
Water Quality Standards Coordinator

Attached are Region 10's draft comments to the Department of Environmental Conservation's proposed water quality standards regulations. Normally, we would wait to send out comments until the close of the public comment period. But, in anticipation of our discussions over the next month, we felt that our concerns might be more easily resolved if both parties fully understood our position. We are hoping that we can resolve many of these concerns during the remainder of the public comment period. We will provide our final comments to you at the close of the comment period.

OPTIONAL FORM 99 (7-90)

FAX TRANSMITTAL # of pages ▶ 17

To Jay Nelson	From Sally Marquis
Dept./Agency	Phone # 206-553-2114
Fax # 907/561-7812	Fax #

NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

DRAFT DRAFT

Comments to Alaska's Proposed Water Quality Standards

17 AAC 70.010(c) Natural characteristics of water

The state is proposing to administratively approve natural levels as applicable criteria where ambient levels exceed criteria 'naturally'. We can appreciate this need. However, this regulation must be applied only in the few situations where conditions are truly natural, that is not human caused. Ambient waters affected by a discharger should not automatically through operation of this clause, become the default criteria. Please define 'natural' in your regulations so as to clearly exclude human caused pollution. The state of Washington, for example, is currently proposing a definition of natural in its water quality standards (WQS) regulations as follows:

> "natural conditions" or "natural background levels" means surface water quality that was present before any human-caused pollution.

18 AAC 70.020(b) Fecal coliform

The state is proposing adoption of a bacterial standard based on a 1976 federal criteria recommending 200 FC/100 ml. EPA has replaced the 1976 criteria with one recommending the use of *E. coli* or enterococci.

We have the following concerns with this proposal.

1) The proposed standard is not consistent with federal criteria. EPA recommended the use of fecal coliform bacteria as indicator organisms until 1986, when the Agency published revisions recommending use of *E. coli* or enterococci. The revisions were based on studies showing significantly better statistical correlations between the incidence of swimming-related gastroenteritis and either *E. coli* or enterococci at fresh water beaches and enterococci at marine beaches than between gastroenteritis and total or fecal coliform.

The agency's new bacterial criteria superceed previous criteria. Therefore, if the state wishes to adopt the 1976 criteria, it must present a scientifically defensible argument that the proposed criteria are fully protective of recreational uses. We agree with the state that this might better be considered when more time allows, perhaps later during the triennial review.

3) Alaska Department of Environmental Conservation (ADEC) is currently proposing a criterion limiting less than 10% of samples to exceed 400 FC/100 ml. Is the illness rate for this level of fecal contamination acceptable given that 200 FC/100 ml results in an estimated 19 illnesses/1000 recreational contacts with the water.

4) The table attached to the Alaska issue paper listing state standards is considerably out of date. I have attached a 1992 summary. For your information, the summary includes the following observations: 38 states rely on the 1968 200 FC/100 ml standard; six states and one trust territory have adopted *E. coli* standard for freshwater; eight states, one tribe and two trust territories have adopted enterococci standards for fresh and/or saline waters; and eleven states/territories have fecal and/or total coliform standards more stringent than 200 FC, including Idaho (50), California (20 for selected waters), Oregon (14 for marine waters), and Washington (50 for Class AA and lake waters, 100 for Class A waters, and 14 for marine waters).

18 AAC 70.020(b) Petroleum Hydrocarbons, Oils, and Grease

The state proposes to eliminate the total hydrocarbon (TH) numeric standard of 15 ug/l. The existing TH standard has been acknowledged by ADEC to be "problematic due to the inappropriate method of measurement and has been little used in practice" (p. 10, TH issue paper). The problems with the standard are essentially two-fold: 1) the scientific basis for the numeric limitation is flawed, and 2) the analytical method for measuring compliance with the standard is inappropriate. We believe that these problems should be the impetus for revising, rather than discarding, the numeric standard. Each problem is addressed, below.

1) The scientific basis for the numeric limitation of 15 ug/l for TH, derived from the total aromatic hydrocarbon (TAH) standard, is flawed. Toxicity testing data for a sensitive Alaskan species was used to develop the TAH standard. An average lethal value of 1.0 ppm was measured and the now outdated safety factor of 100:1 was applied. The TAH standard of 10 ug/l was then calculated.

The TH standard was in turn derived from the TAH standard using a TH:TAH ratio of 1.5:1. However, this ratio was inappropriately low, generating a very conservative TH standard. The 1.5:1 ratio is generally accurate when comparing the concentrations of soluble TH and TAH in a given solution. However, the ratio does not apply when all phases of TH (soluble, dissolved, and particulate) are

compared to TAH. As ADEC noted in the position paper, the ratio of all phases of TH to TAH in Alyeska's effluent is greater than 560 to 1. These numerous and complex technical difficulties render the TH standard inaccurate, but not inoperative altogether.

2) A further complication with the existing TH standard is the stipulated analytical method. The method required for measurement of the TH standard is method 503B (partition infrared). The detection limit of method 503B is 200 ppb which is significantly higher than the TH standard of 10 ppb.

Given the above difficulties with the standard it is appropriate that the numeric standard be revised, but NOT eliminated as has been proposed. The methodology for derivation of the standard should be reviewed and a more scientifically defensible limitation should be included in the Alaska WQS revisions. A first step may be to review the TH standard present in other state standards.

In closing, we suggest you revisit the TH standard to derive an appropriate replacement rather than to eliminate the it altogether. It is important to have a scientifically defensible and enforceable standard. Our office would be pleased to offer assistance in this endeavor.

18 AAC 70.020(b) Sediment

The state is proposing to substitute "settleable solids" for "sediment" and to add, "as measured by the volumetric Imhoff cone method." It suggests in its issue paper that turbidity and settleable solids together provide adequate protection and that the Imhoff method offers advantages of low cost and ability to be measured on-site. We offer the following concerns with this proposal (please see the attachment "Comments on proposed change in Alaska's water quality standard (WQS) for sediment" from Burney Hill to Sally Marquis, for further information):

1) Sediment is generally thought to incorporate settleable solids and total suspended solids (see 18 AAC 70.110(37). The proposed language essentially removes total suspended solids from consideration in the sediment criteria.

There are circumstances under which a standard for total suspended solids is important to the protection of the biotic integrity of receiving waters. While settleable solids have particularly significant impacts in the suffocation and burial of life on the bottoms of water bodies, and turbidity has impacts on primary production and visual acuity, suspended solids may affect aquatic life

(especially eggs, larvae, filter feeding invertebrates and fishes) in ways which would not be protected by standards for settleable solids and turbidity. Perhaps 10 percent of the environmental impacts involving the three parameters could be better controlled with the support of a WQS for suspended solids. Thus, a WQS criterion for total suspended solids should be an integral part of a standard for sediments in the water column.

2) Although the state said in its issue paper that "total" methods are time-consuming and expensive relative to the Imhoff cone, it did not expand on this point to give the reviewer sufficient information to weigh whether this advantage is great enough to warrant omitting total suspended solids.

3) Alternative language might be, "No significant increase in concentrations of sediment, including both settleable solids and total suspended solids, above natural conditions", without explicit reference to an analytical method. The term "significant" replaces the proposed term "measurable" in providing, along with state mixing zone policies, professional discretion in the analysis of site-specific conditions and variability. If you use the term significant, we would suggest providing a definition so as to minimize ambiguity in applying the standard.

18 AAC 70.020(b) No Observed Effects Concentration

We believe that it is appropriate for the state to move away from the .01 times the 96 hour LC50 tc the no observalbe effects concentration (NOEC) approach to limit whole effluent toxicity. Because proposed language uses "based on the NOEC of chronic toxicity as determined through toxicity testing..." freely, it is essential that ADEC spell out in implementation guidance exactly how this will be done. (Note: it must be understood that the NOEC protocols are very species specific and few of the test species are endemic to Alaska.)

Related to this provision, we also strongly encourage the state to adopt a narrative free from criterion for toxics. This general provision provides the state with the authority to regulate any chemical/toxic pollutant which threatens human health or the environment. This provision is necessary as a basis to regulate toxics where the state has not adopted a numeric criterion and there is not an adequate basis to calculate a NOEC. In addition, the free from criterion can be used to protect human health where there is no state-adopted numeric criterion. (The NOEC approach proposed by the state does not apply to human health protection.)

18 AAC 70.022 Human Health Criteria

Application of criteria

The proposed language states that the "following water quality criteria for the protection of human health apply to waters where the department determines that there is a reasonable expectation of human exposure through ingestion of contaminated water and aquatic life." The regulations then list criteria for arsenic, dioxin and chloroform. We have two concerns with this language:

1) One could misinterpret this language to assume that these are the only human health criteria adopted by the state. This is clearly not the case; Alaska has adopted human health criteria for non-carcinogens.

2) The proposed regulation states that application of these criteria is at the department's discretion. This is vague. The state should clearly apply the criteria to specific uses in its regulation as it has other criteria. Furthermore, to be consistent with 303(c)(2)(B) and EPA's proposed Toxic Rule, the state should apply the criteria using the same "rules" followed by EPA in writing the requirements for the Toxic Rule. For example, "In the absence of such an approved State determination (a use attainability analysis), EPA has proposed fish consumption criteria for all aquatic life segments." (56 FR 58432).

Groundwater

We suggest clarifying the proposed narrative to identify which human health criteria apply, for example, criteria for the consumption of water plus organisms or for consumption of organisms only.

Arsenic

To achieve compliance with Section 303(c)(2)(B) of the Clean Water Act (CWA), EPA requires states to adopt EPA's human health criteria using a risk level of 10^{-5}, 10^{-6}, or 10^{-7} or to present other scientifically defensible numbers. Alaska has proposed numbers that it considers scientifically defensible: 50 ug/l for water supply and 190 ug/l for other human health protection categories for freshwater, and 36 ug/l not to be exceeded on the average over a four day period for saltwater. We do not believe that the state's position adequately presents a scientifically defensible position. Our concerns are presented, below. Please

refer to the attached memo by David Frank for additional comments.

(A) The state reasons that because arsenic occurs only in a predominantly non-bioavailable organic form in fish, fish consumption should not be considered in criterion development.

1) The available scientific data do not prove that arsenic is completely absent from fish and other seafood such as shellfish. In fact, the issue paper itself refers to a Canadian study which indicates that freshwater fish contain 10% inorganic arsenic.

Also, it is likely some shellfish (e.g., bivalves and some mollusks) are less able to convert inorganic arsenic to the organic form because they lack the liver-like organ needed for detoxification. In support of this are the results of a study done at the University of Washington in which urinary inorganic arsenic was measured in human subjects after eating mussels. The results of this showed that a large percentage of the arsenic found in the urine of these test subjects is in the low molecular weight form and not in the high molecular weight species (e.g., arsenobetanes) expected from seafood.

2) Very little is known about what happens to seafood (organic) arsenic once it enters the human gastrointestinal tract. The stomach is very acidic and contains enzymes specific for degrading proteins. Therefore, it is conceivable that the form of arsenic available for absorption in the gastrointestinal tract is not the organic arsenic species that was originally ingested.

(B) The state cites epidemiological studies in Lane County, Oregon and Fairbanks, Alaska which do not show toxicological effects even at ambient levels that exceed EPA's drinking water standard (Maximum Contaminant Level, or MCL). It concludes that the lack or toxicological effects in Fairbanks is evidence that EPA's human health criteria are too stringent and that a freshwater criterion based on a MCL is adequately protective.

1) The issue paper questions the validity of the Taiwan data because of (1) genetic differences between the Taiwanese and Americans, and (2) the low protein diet of the Taiwanese. These criticisms are not supported by data from other populations, including the Germans and the Mexicans.

EPA's cancer potency factor for ingestion of arsenic is based upon data of increased skin cancer incidence in people exposed to arsenic contaminated drinking water in Taiwan. An increased cancer risk as a result of ingestion of arsenic in drinking water and medicines has also been shown in

Mexico and Germany. EPA used the Taiwanese studies to calculate the cancer potency factor because it was the best of all of the studies. However, when EPA compared the German and Mexican data to the Taiwanese data they concluded that the German data, and especially, the Mexican data were consistent with EPA's potency number calculated using the Taiwan data.

There is no data to suggest that the Germans or the Mexicans are genetically different from people in the U.S. Also, there is no evidence that the German and Mexican populations studied had diets low in protein.

2) The issue paper uses negative results from epidemiological studies done in the U.S. to question the Taiwanese data. This issue was addressed by EPA's Scientific Advisory Board (SAB) in their review of arsenic issues related to the required development of a new Drinking Water Standard by EPA. The SAB concluded that "part of the basis for the absence of association in the U.S. studies is insufficient statistical power, given the magnitude of the exposure of the U.S. cohorts". In other words, the numbers of people and/or the levels of exposures in the U.S. studies were too low to be able to detect an increased cancer risk.

3) Numeric standards for contaminants are different under the Safe Drinking Water Act and the CWA. MCLs are based on feasibility considerations, including the availability of technology to achieve the regulatory level and the cost of such treatment. Standards/criteria developed under the CWA are based strictly on the basis of health effects, and do not consider feasibility considerations. The methods used to derive the human health values under both Acts are generally considered protective of human health.

EPA's proposed "Toxics Rule" (56 FR 58420) has identified the following guideline for applying its human health criteria to public water supplies: "If the State has public water supplies where aquatic life uses have not been designated,... the "water + organisms only" criteria in Column D(I) ... are promulgated." To be consistent with this guideline, the state needs to revise its proposed drinking water supply criterion of 50 ug/l based on a drinking water MCL, to 0.018 ug/l, a human health criterion assuming consumption of "water + organisms."

The state could argue that applying a MCL to a water supply use is reasonable, given that fish consumption is not associated with the use. However, such an application would be appropriate only in those waterbodies where the state has clearly demonstrated that no potential for fish consumption exists.

Like EPA's human health criteria, MCLs are based on risk assessments and have risk values associated with them. The drinking water MCL for arsenic of 50 ug/l has an associated cancer risk of 10^{-3}. A new study published this summer in the journal *Environmental Health Perspective* (volume 97, pg. 259-267), "Cancer Risks from Arsenic in Drinking Water", authored by experts including researchers from biomedical, environmental and epidemiological university departments, concluded that at 50 ug/l, "the lifetime risk of dying from cancer of the liver, lung, kidney, or bladder from drinking 1 L/day of water could be as high as 13 per 1,000 persons", or 10^{-2}.

In 1962, the Public Health Service published drinking water standards. The documentation on arsenic in this publication states, "The U.S. Public Health Service Drinking Water Standards for 1946 established an arsenic limit of 0.05 mg/l. In light of our present knowledge concerning the potential health hazard from the ingestion of inorganic arsenic, the concentration of arsenic in drinking water should not exceed 0.01 mg/l and concentrations in excess of 0.05 mg/l are grounds for rejection of the supply."

EPA is publishing proposed new drinking water regulations for arsenic next summer. Information from studies on internal cancers will be used to reexamine the arsenic MCL. Although the regulatory language will not, of course, be known until the rule is final, we expect the arsenic MCL to be much lower than 50 ug/l. We also expect the rule to assign arsenic a maximum contaminant level goal close to or equal to zero. (This level reflects the level of contamination where "no known or anticipated adverse effects on the health of persons occurs and which allows an adequate margin of safety.") In light of the anticipated changes, it may be appropriate for the state to wait for rule completion before endorsing a MCL value.

(C) The state suggests that trivalent, inorganic arsenic rather than total arsenic should be regulated. It also states that this form of inorganic arsenic is not being discharged to the Alaskan environment as it is in other areas of the U.S.

1) Arsenic has an extremely complicated chemistry. The state's emphasis on trivalent arsenic as the only inorganic form of concern is a serious oversimplification of arsenic solubility, toxicity, and oxidation-reduction reactions.

Although <u>acute</u> toxicity studies indicate that trivalent forms of arsenic are more toxic than the pentavalent form, this may not be the case with longer term chronic studies. In fact, exposures to the both the trivalent and pentavalent

forms occurred in the people involved in several of the studies of carcinogenicity. In addition, inorganic arsenic (+5) can be interconverted in the blood of humans with the (+3) species, which is then methylated.

Both pentavalent and trivalent forms are soluble and toxic. Conversion of one form of arsenic to another by reduction or oxidation may occur in the environment. Although studies of inorganic forms of arsenic indicate that pentavalent arsenic is less soluble and less toxic than trivalent arsenic, one should neither conclude nor imply, that pentavalent arsenic is therefore insoluble and non-toxic.

Emphasis on trivalent arsenic alone in waste discharge regulation would neglect the potential for redox reactions when wastewater or a receiving stream enters reducing environments. Consequently, total arsenic would be the important parameter to regulate for adequate protectiveness.

2) The state's argument that trivalent arsenic is not being discharged to the Alaskan environment has a weak basis. We agree that there are no smelters operating in Alaska. However, many other mining facilities exist or are proposed for extracting, grinding, and treating ore in order to mobilize and concentrate metals. Ore processing certainly can modify arsenic speciation.

(D) The state argues that because the proposed saltwater criterion of 36 ug/l is lower than the drinking water MCL of 50 ug/l, and that fish are not a significant source of inorganic trivalent arsenic, the aquatic life trivalent criterion of 36 ug/l should be adopted as the human health saltwater criterion.

1) See above for our position that fish may be a significant source of inorganic arsenic.

2) See above for our position that the complexity of arsenic speciation argues for a human health criterion based on total arsenic.

3) The state proposes to protect human health based on a number designed to protect aquatic life. What is the rationale for this approach?

(E) The state proposes for adoption 190 ug/l for human health protection in freshwater use classes other than water supply.

1) Although no supporting argument is presented, we assume that this criterion is based on EPA's aquatic life freshwater chronic criterion for trivalent arsenic. If so, see above for our arguments that a total arsenic criterion is more reasonable, that fish consumption should be

considered and that protecting human health based on aquatic life protection is questionable.

(F) In conclusion, because of scientific uncertainties regarding the toxicology of arsenic, its chemical complexities, anticipated new rulemaking, and the relatively high intake of fish and other seafood in Alaskan diets, we recommend adoption of EPA's human health criteria.

Dioxin

EPA's proposed "Toxics Rule" (56 FR 58420) has identified the following guideline for applying its human health criteria to public water supplies: "If the State has public water supplies where aquatic life uses have not been designated,... the "water + organisms only" criteria in Column D(I) ... are promulgated." To be consistent with this guideline, the state needs to revise its proposed drinking water supply criterion of 30 parts per quadrillion (ppq) based on a drinking water MCL, to a human health criterion assuming consumption of "water + organisms."

The state could argue that applying a MCL to a water supply use is reasonable, given that fish consumption is not associated with this use and that the avenue of exposure for dioxin via water is minimal. However, such an application would be appropriate only in those waterbodies where the state has clearly demonstrated that no potential for fish consumption exists.

The state has not designated human health dioxin criteria for the remaining fresh water uses. The state must designate criteria for these uses to be in compliance with Section 303(c)(2)(B). We believe that these should be designated assuming consumption of "organisms only."

The proposed human health criterion for marine waters is 1.2 ppq. As you are aware, EPA has approved state dioxin criteria ranging from 0.00051 ppq to 1.2 ppq. Criteria of 1.2 ppq have been approved for the states of Virginia, Maryland, Georgia, South Carolina, and Alabama. Several other states have adopted a criteria of 1.0 ppq (Mississippi, New Hampshire, New York, Tennessee.) However, we have two concerns relating to the proposed criterion, as follows:

1) The proposed state standard is based upon a fish consumption rate of 6.5 grams per day. While the majority of states with EPA-approved human health criteria have based them on this consumption rate, the Alaska Department of Fish and Game has collected information specific to Southeast Alaska which indicates that residents eat significantly more seafood than this amount. In addition, certain groups of individuals, such as Native Americans, appear to eat much

larger amounts of fish. A recent survey of fish consumption by Native Americans in the Columbia River basin found that adult members of one tribal group (the Nez Perce Tribe) eat an average of 80 grams of fish per day (see attached memo from Harold Sheppard of the Columbia River Intertribal Fish Commission dated April 5, 1992). The survey also indicated that Nez Perce children consume an average of 20 grams of fish per day. The 90th percentile consumption rate for Nez Perce Tribal members is 435 grams per day.

The following states used fish consumption rates greater than 6.5 grams per day in deriving dioxin criteria:

State	Consumption Rate (grams per day)
Arizona	7.5
Delaware	37
Hawaii	19.9
Illinois	20
Louisiana	20
Minnesota	30
Texas	10/15 (freshwater/saltwater)
Wisconsin	20

These rates were primarily derived based upon consumption of fish by recreational fishermen.

2) The State of Alaska, like EPA, has no dioxin criterion for the protection of aquatic life in marine waters. Thus, if the state adopts a criterion of 1.2 ppq for the protection of human health, that will be the only criterion used in the development of dioxin limitations required to meet WQS. (This is likewise true for all the states having adopted dioxin criteria of 1.2 ppq.)

Attached are several documents concerning the effects of dioxin on fish and wildlife. We encourage the state to consider this information in the context of protection of the use described in 18 ACC 70.020(2)(C) for marine waters ("Growth and propagation of fish, shellfish, other aquatic life, and wildlife").

- Declaration of Dr. Steven P. Bradbury, U.S. EPA, dated February 12, 1992. This document was an enclosure to a letter to the U.S. Fish and Wildlife Service (FWS) in which EPA determined that a dioxin concentration of .013 ppq in the Columbia River would not adversely affect bald eagles. This information was sent to the FWS as part of a formal consultation under section 7 of the Endangered Species Act concerning the establishment

of a total maximum daily load for dioxin in the Columbia River Basin.

- A publication by Paul Mehrle et al. entitled, "Toxicity and Bioconcentration of 2,3,7,8-Tetrachlorodibenzo-dioxin and 2,3,7,8-Tetrachlorodibenzofuran in Rainbow Trout." Mehrle and his co-workers found that trout exposed to 38 ppq of dioxin for 28 days, followed by a depuration period of 28 days, suffered 45% mortality. This concentration (38 ppq) was the lowest concentration tested, thus a no-observable-effect concentration (NOEC) could not be calculated.

- A publication by Phillip Cook et al. entitled, "_____." This publication appeared in the proceedings of the 1990 Banbury conference on dioxin. The publication contains information on the effects of dioxin on aquatic life. Of particular note were the results of maternal transfer studies on Lake Trout, which indicated a NOEC of 30 parts per trillion (ppt) for Lake Trout eggs. Related studies indicated a bioconcentration rate of 180,000 (this rate was specific to Lake Ontario).

- A publication by Barry Walker, entitled "_____." This publication provides dose-response data for aquatic organisms exposed to dioxin.

- Draft dioxin criteria developed for the protection of birds and mammals as part of EPA's Great Lakes Water Quality Initiative. The draft criteria are 0.14 ppq for the protection of birds and 0.0085 ppq for the protection of mammals. This analysis was provided to the FWS as part of EPA's Endangered Species consultation for the Columbia River dioxin total maximum daily load.

In conclusion, while the proposed criterion for protection of human health is equivalent to those approved by EPA in some other states, concerns about the potential impacts of this concentration on fish and wildlife lead us to encourage ADEC to evaluate whether protection of aquatic resources and wildlife should be considered as part of the current standards revision. We suggest you contact Carol Shuler of FWS for further information (503/231-6169). Her address is 2600 S.E. 98th Ave., Suite 100, Portland, Oregon, 97266.

Chloroform

The state is proposing application of EPA human health criteria for all uses except drinking water supply at 4700 ug/l

(using a 10^{-5} risk level). For drinking water supply, the state is proposing to adopt EPA's MCL of 100 ug/l for total trihalomethanes which include chloroform, and applying it to chloroform.

It is appropriate to apply EPA's numbers as proposed for all uses expect drinking water supply. We have the following concerns with the proposed drinking water criterion:

1) EPA's proposed "Toxics Rule" (56 FR 58420) has identified the following guideline for applying its human health criteria to public water supplies: "If the State has public water supplies where aquatic life uses have not been designated,... the "water + organisms only" criteria in Column D(I) ... are promulgated." To be consistent with this guideline, the state needs to revise its proposed level of 100 ug/l to 5.7 or 57 ug/l at 10^{-6} and 10^{-5} risk levels, respectively.

The state may argue that using a MCL for drinking water supply is reasonable, given that fish consumption is not associated with the use. However, application of this criterion to specific waters would be reasonable only where the state has clearly demonstrated that there is no potential for fish consumption.

2) Numeric standards for contaminants are different under the Safe Drinking Water Act and the CWA. The methods used to derive the human health values under both Acts are generally considered protective of human health. (Like EPA's human health criteria, MCLs are based on risk assessments and have risk values associated with them. At 60 ug/l of chloroform, for example, the MCL risk level is 10^{-5}.) But MCLs also incorporate feasibility considerations, including the availability of technology to achieve the regulatory level and the cost of such treatment.

2) The drinking water standard of 100 ug/l for Total Trihalomethanes (TTHMs) is currently undergoing negotiated rulemaking (beginning September 28, 1992). The revision may include specific levels for each of the four trihalomethanes as well as a total level for the sum of the trihalomethanes found. Specific levels for each THM and the total are not yet known.

At the present time only public water systems serving greater than 10,000 persons are subject to this regulation. The new regulation will probably be applicable to all public water systems. The proposed regulation is currently scheduled to be published in the federal register in June 1993. The final rule is scheduled for promulgation in June

1995 and the effective date of the regulation would be 18 months after promulgation, or January 1997.

18 AAC 70.023. Chronic Toxicity of an Effluent

We support the proposed change. However, effluent toxicity is not typically "measured" at the boundary of a mixing zone, and a measurement in the receiving water cannot reliably determine compliance. Therefore, we suggest replacing "measured" in the first sentence of this section as follows:

> "The chronic toxicity of an effluent discharged to state water, either at the point of discharge or at the boundary of a mixing zone authorized by the department in a permit or certification, shall not exceed 1.0 chronic toxic unit (TUc)."

18 AAC 70.032 Mixing Zones

As outlined below, proposed mixing zone language does not alleviate EPA concerns about the lack of clear guidelines for mixing zones in Alaska. Without such guidelines, EPA and the state could experience major delays and possible conflicts in the permit issuance process.

Most NPDES permits have a need for mixing zone determinations, and the size of the mixing zone is often a source of controversy. EPA often proposes mixing zones to the state in draft permits, based on its interpretation of the standards. The state then must either certify the proposed mixing zones or make a different determination. Unfortunately, the lack of a straightforward guideline causes major delays in permit issuance; new source permittees are particularly frustrated with the delays.

EPA does have the authority to issue permits without final state 401 certification if certain time constraints are exceeded. In some instances of major delays, EPA has made this determination and issued permits without waiting for state certification. The final permit then reflected EPA's interpretation of an appropriate mixing zone.

EPA would like to avoid this breakdown in cooperation and effectiveness, but believes this is possible only if the standards contain mixing zone guidelines that are clear and straightforward.

(a)(1)

The state needs to develop some guidelines for what are "adverse effects" and "significant risk to human health".

Otherwise, the standard will be very difficult, if not impossible, to implement. The state will find itself in the position of engaging in endless debates with permittees over whether or not there will be effects, whether any expected effects are "significant," etc.

(a)(3)

The added language appears to be out of context. We suggest moving the added language to section (b)(4).

We are concerned with the statement "mixing zones applied for and granted after permit issuance...." Granting a mixing zone after permit issuance could create problems with antibacksliding or antidegradation, and added workloads associated with permit modifications.

The language in the section is a bit confusing. The statement that the mixing zone will be based on the "level of treatment defined in the permit" implies that no mixing zones will be granted after permit issuance because, if no mixing zone is specified prior to permit issuance, the level of treatment required in the permit will be sufficient to meet water quality criteria at end-of-pipe. Also, by referencing (e)(3) only, rather than all requirements under (e), an impression may be created that (e)(1) and (e)(2) are not relevant.

(e)(3)(A)

The statement "mixing zones . . . may not exceed aquatic life criteria . . ." is confusing. If, as it appears, the meaning is that water within the mixing zone may not exceed aquatic life criteria, we suggest stating that mixing zones for aquatic life are prohibited in these cases.

Is the statement, "...effluent flow is greater than 25% of the stream flow" based on upstream or downstream flow? For example, if the streamflow is 75 MGD upstream, can the permittee discharge 25 MGD, or does upstream flow have to be 100 MGD to allow a discharge of 25 MGD? The standard also should specify the flow: average, critical low, high, etc.

(e)(3)(D)

This paragraph is confusing. Does this mean, for example, if the copper in a discharge exceeds the aquatic life criterion and the turbidity is more than 5 NTU but less than 25 NTU, the permittee can't get a mixing zone for turbidity?

(Note that Option 2 (e)(3)(iv) in the discussion paper on mixing zones is also unclear. Do you intend to mean that if the natural level of copper in the receiving water exceeds the criteria, permittees are prohibited from getting mixing

zones for any pollutants? The wording under option 1 is at least more clear, in that it specifies end-of-pipe.)

A final comment is to suggest that the state add a provision prohibiting acute toxicity in mixing zones.

18 AAC 70.110(46) "Water"

The language of the definition exempts several types of waters from protection as waters of the state. The exemptions are too broad and may result in significant disagreements between the federal and state levels when dealing with specific waterbodies. For example, under your language, Silver Bay, Gastineau channel or Wards Cove might be identified as treatment systems. Therefore, the present language, leaving the decision as to what does or does not constitute waters that are covered by the CWA to the discretion of the department is not acceptable.

An example of language that would address our concern is, "...impoundments, or other surface water bodies that are ~~either~~ integral parts of wastewater treatment and disposal systems ~~approved by the department, or that are~~ designed, constructed and operated to meet the requirements of the federal CWA."

Alaska State Legislature

Official Business

P.O. BOX V
State Capitol
Juneau, Alaska 99811

September 15, 1992

John Sandor
Commissioner
Department of Environmental Conservation
410 Willoughby Avenue
Juneau, Alaska 99801

Dear Commissioner Sandor:

Your department's recent effort to allow greater levels of pollution in Alaska's waters concerns us greatly. As you know, clean water is vital to Alaska's economy - especially to two of our largest industries, fishing and tourism. Clean water is no less vital to the personal health and well-being of individual Alaskans, to the viability of communities and to a way of life admired throughout the world. We are dismayed that the Department of Environmental Conservation, which is charged with ensuring a healthy environment, would propose regulations to substantially degrade water quality in Alaska. DEC's efforts, and the manner in which they have been presented to the public, have raised many concerns which we would like to discuss with you.

Public Process

Alaska has developed a strong tradition of involving the public in governmental decision making. We have observed that the resulting exchange not only produces better informed decisions on the part of government, it builds a supporting consensus among citizens. However, these laudable goals can only be achieved when the public is both well informed and able to participate. Unfortunately, DEC's efforts undermine both of these conditions.

Alaskans are traditionally busiest during the summer months, earning a living, putting up food for the winter and recreating. The expedited schedule for review of these proposals leaves insufficient time for adequate public participation. While the extension of the comment period until the end of September is appreciated, many of those most affected - commercial fishing people and rural Alaskans come immediately to mind - still cannot participate in any meaningful way. To avoid this disenfranchisement of Alaskans with a large stake in the outcome, we suggest DEC extend the public hearing process until December.

In order to ensure a well-informed discussion, the background knowledge and rationale for a proposed decision must be clearly explained to the public. Unfortunately, DEC's discussion papers fail in this regard. They are internally inconsistent and rely upon careful omissions of fact to make their case. Quite often, they are simply misleading.

The dioxin paper serves as an example.

> Given the EPA's current reassessment in the Office of Research and Development of its dioxin standard and risk assessment model for suspected and proven carcinogens, it is possible EPA's recommended limits for dioxin could change in the near future. The Water Quality Standards staff recommends the adoption of dioxin limits that are protective of human health and incorporate recent scientific findings.

Nowhere in the discussion proceeding this recommendation is there mention that many researchers now regard dioxin as potentially far more dangerous than previously suspected. As your staff can confirm, the national press has reported upon recent research indicating serious effects to immune systems from even very small exposures to dioxin. Moreover, new discoveries point to mechanisms for carcinogenicity which explain the inconsistent results of earlier testing. These considerations render DEC's attempt to debunk the older research meaningless and call into question the department's commitment to base its regulations on "recent scientific findings."

Other papers reveal even more startling omissions. Regarding hydrocarbons, the assertion is made that measurements need only be made of soluble forms. This approach completely ignores filter feeders, which can concentrate particulate hydrocarbons. There is simply no discussion of the effect your proposals would have on this important variety of aquatic life, or how food chains might be affected as a result. DEC offers no explanation in the documents we have received.

Timing

DEC is currently engaged in the triennial review of its water quality regulations as mandated by the federal Clean Water Act. This review, intended to be comprehensive, is not yet complete. Why then is DEC advancing these proposals now? A hurried and disjointed approach only invites inconsistencies, confusion and, very possibly, needless and costly litigation.

The only pressing time deadline appears to be the imminent adoption of the National Toxics Rule by the Environmental Protection Agency, which would set criteria in the absence of any already established by the state. A large segment of the public perceives your action at this time as an effort to beat the clock, to the advantage mostly of pulp mills, mining concerns and the Alyeska terminal. DEC has done little in the public hearing process to convince Alaskans otherwise.

The discussion papers acknowledge the possibility that EPA standards will change in the near future, which would argue against DEC's adoption of new standards at this time. Instead, the department rushes ahead. Again, the dioxin paper:

> If the adopted criteria prove not to be protective [of human health] then the Water Quality Standards staff recommends revisiting the dioxin human health limits in a future Water Quality Standards amendment.

This recommendation does nothing to reassure the public that human health is indeed being protected by these proposals and further underscores the lack of wisdom in taking action at this time.

Toxics

The Environmental Protection Agency identifies 126 toxic compounds as priorities for regulation because of their potential to harm living organisms. Why then, have you chosen to expedite action on just four: dioxin, chloroform, arsenic and total hydrocarbons?

Level of risk

We are sure you will agree that Alaskans deserve to be free from the assaults of pollution experienced by less fortunate people elsewhere. EPA publishes figures based upon three levels of risk. However,throughout DEC's review of toxics, you choose to accept the highest risk factor in your calculations, 10^{-5}. From the absence of any rationale, DEC appears to have simply assumed that Alaskans wish to be subjected to the greatest possible risk anticipated by federal law. We do not share this assumption. Indeed, we believe that Alaskans fervently desire to be treated as deserving of the high level of protection which modern methods and technology make possible.

DEC's calculation of acceptable levels of exposure also suffers from unrealistic assumptions regarding the amount of fish consumed by Alaskans. The national average is 15 lbs. per year. Alaskans outside the urban areas consume many times more than this. Indeed, many rural residents consume hundreds of

pounds per year - averaging over 700 lbs. in some villages. Data provided to DEC by the Department of Fish and Game make this clear. As you can see, the national average is wildly inaccurate if applied to Alaska. Inexplicably, DEC proposes to adopt this inappropriate measure, again without rationale.

DEC's assumptions in regard to bioconcentration are equally questionable. Your staff appears to have ignored the possibility that salmon, the most commonly eaten Alaskan species, being fatty, would contain a higher level of toxins than other species. Again, no explanation is given.

This combination of factors could yield disturbingly high levels of exposure. Public discussion has centered around the choice of 1 in one million cancers vs. 1 in one hundred thousand. However, if more realistic assumptions are made, the actual incidence of cancer which we are choosing to accept in these regulations could be as high as 3 in one hundred. We believe that Alaskans are not prepared to accept this level of risk.

Alaska specific toxicity standards

The subject of what level of exposure to a pollutant results in chronic toxicity has been the subject of much research and will no doubt continue to be studied. We do not expect that a definitive answer for all time will be established for each chemical in our environment. We do expect, and Alaska statutes mandate, that the Department set levels protective of both human health and the environment. The draft regulations propose to establish standards based upon actual effects observed on Alaskan species. On its face, this sounds reasonable. On closer examination, questions arise.

DEC anticipates than in many cases, testing will use protocols and methods already established by EPA. DEC goes on to say, however,

> Because of Alaskan conditions, site-specific considerations, or policy issues, the state may wish to use alternative protocols.

What "policy issues" do you foresee as affecting the choice of protocols guiding scientific research? We would like assurance that this provision will not allow political agendas to drive science. How does the Department plan to develop its own protocols?

We are also concerned that the Department will have insufficient resources to develop protocols or to oversee testing. During a public hearing, Dave Sturdevant indicated that DEC has not estimated how much testing will be involved in establishing Alaska specific standards, and that DEC has made no calculation of

what the effect might be upon DEC's budget. With recent drastic reductions to DEC's lab, we are concerned that the Department lacks the ability to do its own testing or to verify the results of any tests conducted by a regulated facility.

Definition of Water

These proposals would make it possible for an operator to escape regulation simply by impounding a stream, thereby making it a part of "a wastewater treatment and disposal system." Moreover, current regulations aim directly at the problem of toxic metals and other pollutants seeping into groundwater. In redefining "water" DEC would strip requirements for water quality from all unlined waste disposal sites.

The position papers mention that "difficulties have occurred" in applying regulations given the present definition. It is hard to imagine that whatever these "difficulties" might be, they would justify abandoning the state's commitment to protect its waters. DEC is proposing an inappropriate solution to its problem. The damage appears to outweigh the good, rather like watering a thirsty house plant with a fire hose.

Mixing Zones

Current regulations prohibit a mixing zone when the discharge contains substances which "could bioaccumulate; concentrate or persist in the environment; cause carcinogenic, mutagenic, or teratogenic effects; or otherwise present a risk to human health." DEC proposes to modify the carcinogenic, mutagenic or teratogenic effects standard by limiting it to "human health at the location." This new standard, as other provisions of these draft regulations, simply fails to address real life problems, hence, effectively eviscerates meaningful protection. Does the Department no longer feel it necessary to consider the effect upon those who harvest a resource in one location and then consume it in another? Most Alaskans fall into this category.

The ambiguity of the proposed language presents further problems. If it is difficult to specify the acceptable boundaries of mixing zones, imagine the struggle to define "location." Similarly, who will determine, and upon what basis, what is a "significant" risk to human health and what is insignificant? The introduction of such ambiguity does little to clarify standards for the regulated industries or reassure the public that their health or the environment will be adequately protected. It does much to assure lawyers of future employment.

Commissioner, Alaskans everywhere, in all occupations, depend upon clean water. Any regulatory action should have at its core the aim of protecting human health and the environment. As members of the House subcommittee charged with oversight of the Department's budget, we have had ample opportunity over the years to observe DEC's activities. Never, in our experience, has there been disagreement over that fundamental principle. The regulations DEC is how proposing appear to do little or nothing to advance public protection. Indeed, they appear to retreat. The technical and scientific justification for your proposals seem insufficient for such a sweeping retrenchment.

We are concerned that we are being presented a politically driven document, designed to aid certain industries at the expense of other industries and the public interest in general. While no one would argue against encouraging economic health, we would hope that such a policy would apply equally to everyone. These regulations could very well threaten at the very least the commercial and sport fishing industries - which employ more Alaskans than any other - subsistence activities, the nascent mariculture industry, and tourism. Moreover, every member of the public, however they make a living, deserves to be protected from the health threat, the cost and lost opportunities of a degraded environment.

Government and industry have long promised that economic development can occur in an environmentally sound manner. Indeed, we Alaskans understand that a healthy economy depends upon a healthy environment. We urge you to reconsider the draft regulations, and look forward to continuing this discussion.

Sincerely,

Representative Niilo Koponen

Representative Kay Brown

STATE OF ALASKA
House of Representatives
District 27

Representative Cliff Davidson
Chairman
House Resources Committee

Box V, Juneau, AK 99811
(907) 465-2487
Box 746, Kodiak, AK 99615
(907) 486-8250

29 October 1992

John Sandor, Commissioner
Department of Environmental Conservation
410 Willoughby Avenue Suite 105
Juneau, AK 99801

Dear Commissioner Sandor,

Your proposed revisions to the State of Alaska's water quality standards cause me great concern. After the House Resources Committee hearing and a thorough review of your department's draft revisions, I have come to the conclusion that you must scrap them in their original form and offer new regulations that properly reflect a commitment to clean water.

The purpose of these water quality regulations should be to maintain and improve water quality throughout the state. The regulations as originally proposed would instead sanction the degradation of water in Alaska, a position that I believe most Alaskans would emphatically reject.

By now the Department is well aware of which portions of the new regulations are unacceptable to many water users and the public. However, I would like to mention two areas in particular need of substantial revision.

The mixing zone concept was originally an interim provision written to gradually bring existing industries into compliance with provisions of the Clean Water Act. It was expected that all users would eventually meet the water quality standards at the "end of the pipe." In other words, mixing zones were to be a temporary "fix" not a permanent solution. However, under these regulations, the concept of mixing zones has been extended, allowing the Department a

virtually unlimited ability to create new and expand existing mixing zones to the detriment of clean water in Alaska.

I am also concerned that the proposed regulations lack precision and are generally written to allow far too much discretion to the Department. While regulations should not be so rigid as to remove all administrative flexibility, these regulations will likely prevent the Department from operating from a firm foundation and may subject the Department to needless litigation. I believe that the current language will facilitate attempts by polluters to seek exemptions from legitimate and otherwise effective provisions.

Commissioner Sandor, the Department of Environmental Conservation must be an advocate for clean water. That advocacy does not come through in these draft regulations. I would strongly request that you withdraw these regulations and offer new proposals that better meet the objections of clean water users, the public and the EPA. With best regards,

Sincerely,

Cliff Davidson

Representative Cliff Davidson, Chairman
House Resources Committee

cc: Al Ewing, EPA
Sally Marquis, EPA

REPRESENTATIVE DAVE DONLEY

ALASKA STATE LEGISLATURE
DISTRICT ELEVEN
SEAT A

3111 "C" STREET, SUITE 450
ANCHORAGE, ALASKA 99503
(907) 561-7629 (FAX) 562-4376

ALASKA LANDINGS • BENTZEN • BIRCHWOOD • CHESTER CREEK • HEATHER MEADOWS • [illegible] • MIDTOWN • NORTHSTAR
NORTHWOOD • ROMIG • ROOSEVELT [illegible] • SPENARD • THOMPSON • TURNAGAIN • [illegible] • WOODLAND PARK

CHAIRMAN
JUDICIARY COMMITTEE
VICE CHAIRMAN
REGULATION REVIEW COMMITTEE
MEMBER
RULES COMMITTEE
LABOR AND COMMERCE COMMITTEE

October 7, 1992

Commissioner John Sandor
Department of Environmental Conservation
410 Willoughby Avenue, Suite 105
Juneau, Alaska 99801-1795

Re: Proposed Water Quality Standards Regulations

Dear Commissioner Sandor:

The proposed revisions to the state's water quality regulations are inconsistent with state law, and as such, exceed the scope of the Department's regulatory authority. In addition, the regulations loosen Alaska's water quality standards to such a large degree that, if adopted, they are likely to have a negative impact on our tourism and fishing industries. Finally, independent experts (including the federal Environmental Protection Agency), have reviewed the regulations and concluded that they are based on extremely faulty scientific data.

For all of these reasons, I strongly recommend that you abandon the current draft regulations, and restart the process of updating the state's water quality standards from scratch. I am aware that some have suggested that you merely extend the comment period until December. However, given that the regulations are inconsistent with the state water quality statute (see attached opinion), and given the number of problems with the proposed regulations that have been idenfied by EPA and others (the comments of former Assistant Attorney General Michael J. Frank on the proposed regulations are particularly enlightening), I think it is only fair that the public has a full opportunity to comment on any revised regulations. This can only be accomplished if a full opportunity for public comment is given after the regulations are totally rewritten.

When making revisions to the draft regulations, and when deciding the degree to which you involve the public in reviewing the revisions, I urge you to keep the interests of all Alaskans and all segments of our diverse economy in mind.

Very truly yours,

Dave Donley

Representative Dave Donley

DD:lc

JUNEAU OFFICE
(During Legislative Session January through May)
P.O. BOX V, JUNEAU, ALASKA 99811 • (907) 465-3892 (FAX) 463-5661

EGAL SERVICES
FFAIRS AGENCY
F ALASKA

130 Seward Street, Suite 409
Juneau, Alaska 99801-2105

MEMORANDUM October 7, 1992

SUBJECT: Proposal to modify the definition of "water" in regulations setting out the state's water quality program (Work Order No. 8-LS0116A)

TO: Representative Dave Donley

FROM: Jack Chenoweth
Legislative Counsel

QUESTION PRESENTED: In the context of water quality program standard regulation changes (18 AAC 70), what is the effect of a proposal by the Department of Environmental Conservation to revise the definition of the term "water" so as to maintain or continue its inconsistency with the definition of the substantially similar term set out in and applicable to the body of statutes that are purportedly interpreted or implemented by the regulation?

SHORT ANSWER: The department's proposed revision of the regulatory definition maintains its inconsistency with the statutory definition of a like term. The inconsistency between the regulation and the statute raises a serious possibility that, if challenged, the regulatory scheme of the department may be invalidated.

DISCUSSION:

The Department of Environmental Conservation proposes to amend the state's water quality regulations set out in 18 AAC 70 and, among other changes, the regulatory definition of "water" applicable in that chapter.

The **current** regulatory definition of the term set out in 18 AAC 70.110(46) reads as follows:

> "water" means lakes, bays, sounds, ponds, impounding reservoirs, springs, wells, rivers, streams, creeks, estuaries, marshes, inlets, straits, passages, canals, the Pacific Ocean, Gulf of Alaska, Bering Sea, and Arctic Ocean, in the state's territorial limits, and all other bodies of

surface or underground water that are wholly or partially under state jurisdiction; "water" does not include ponds or lagoons or parts of wastewater treatment systems that are lined or constructed so that seepage into the ground is not allowed.

The proposed regulatory change would add and delete language as follows:

"water" means lakes, bays, sounds, ponds, impounding reservoirs, springs, wells, rivers, streams, creeks, estuaries, marshes, inlets, straits, passages, canals, the Pacific Ocean, Gulf of Alaska, Bering Sea, and Arctic Ocean, in the state's territorial limits, and all other bodies of surface or underground water that are wholly or partially under state jurisdiction; "water" does not include ponds, [OR] lagoons, impoundments or other surface water bodies that are either integral [OR] parts of wastewater treatment and disposal systems approved by the department, or that are designed, constructed, and operated in accordance with valid state or federal disposal permits [THAT ARE LINED OR CONSTRUCTED SO THAT SEEPAGE INTO THE GROUND IS NOT ALLOWED].

I

Both the current definition set out in regulation and the proposed change in language of that regulation cite as authority various provisions of AS 46.03, the general conservation chapter of the Alaska Statutes. However, AS 46.03.110(35) already sets out a definition of the term "waters" [1] applicable to the use of the term within that chapter. The statutory definition of "waters" [2] is broader than either the existing

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[1] This phraseology of the definition of "waters" appears to have been taken without change from former AS 46.05.240, the Water Pollution Control Act, enacted by sec. 1, ch. 117, SLA 1949. The state's Water Pollution Control Act was repealed by sec. 4, ch. 120, SLA 1971, but various references to "state waters" and "waters of the state" and the substance of the definition of the word "waters" were carried forward into the replacement provisions, codified as AS 46.03.

[2] AS 46.03.110(35) reads as follows:

(35) "waters" includes lakes, bays, sounds, ponds, impounding reservoirs, springs, wells, rivers, streams, creeks, estuaries, marshes, inlets, straits, passages, canals, the Pacific Ocean, Gulf of Alaska, Bering Sea, and Arctic Ocean, in the territorial limits of the state, and all other bodies of surface or underground water, natural or artificial, public or private, inland or coastal, fresh or salt, which are wholly or partially in or bordering the state or under the jurisdiction of the state.

(continued...)

regulatory definition of the term "water" or the proposed revision of the regulatory definition. The statutory definition was intended to apply to the term "waters" as it is used throughout AS 46.03. [3]

As a drafting matter, it would seem that nothing of substance may be made to turn on the difference between the use of "waters" in the 1971 statute (derived from an earlier 1949 enactment), codified as AS 46.03.900(35), and later efforts of the department to develop and enforce regulations using "water" (without the "s"). The use of "waters" (with an "s") to refer to a mass of matter to distinguish it from water was liquid was once typical, but has become archaic. Contemporary statutory drafting techniques would favor the use of the word in the singular--"water"--over use of the plural "waters" in the drafting of statutes. If subject to redrafting, the various references to "waters" set out in AS 46.03 would all appear as "water," that is, in the singular. [4]

II

For purposes of the department's authority to regulate, the statute in question provides a complete definition of the word. Consequently, the efforts of the Department of Environmental Conservation to interpret and implement AS 46.03 by relying on a reworked, narrower definition for the word "water"--both as revised before now and as proposed for further amendment in the water quality standards revision that prompted your inquiry--must be seriously questioned. Arguably, substitution of the definition in order to achieve a substantive distinction risks the violation of two key provisions of the state's Administrative Procedure Act,

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[2](...continued)

The significant language in the statutory definition of "waters" that has been omitted from the department's revision of the regulatory definition of "water" is highlighted.

[3] The word "waters" is used in ten sections of AS 46.03--AS 46.03.050; 46.03.070; 46.03.080; 46.03.100; 46.03.120(b); 46.03.740; 46.03.750; 46.03.755(b); 46.03.780; and in two other definitions of AS 46.03.900, paragraphs (16) and (19). The word "waters" is consistently used only as a noun and only in the context of reference to a body of water, or to the aggregate of bodies of water, that would be subject to AS 46.03, as distinguished from "water" in the context of a liquid commodity. In the latter context, the word "water" has been used in these and other sections of AS 46.03.

[4] Similarly, the department's use of "water" (without the "s") is consistent with the vocabulary of drafting regulations followed in the late 1970's when the Department of Environmental Conservation first thought to insert the term into 18 AAC 70 and to revise the definition.

AS 44.62.020 [5] and 44.62.030, [6] calling into question the validity of the provision, Madison v. Alaska Department of Fish & Game, 696 P.2d 168, 176 (Alaska 1985), and its presumptive enforceability, State v. Alyeska Pipeline Service Co., 723 P.2d 76 (Alaska 1986). [7]

Our courts have advised that "[t]o ignore a definition section is to refuse to give legal effect to a part of the statutory law of the state." Cleland v. State, 759 P.2d 553, 555 (Alaska App. 1988), citing 1A Sutherland Statutory Construction, sec. 27.02 (4th ed. 1974). To the extent the Department of Environmental Conservation intends to draw regulatory distinctions, it should respect the caution set out in the most recent version of the Department of Law's "Drafting Manual for Administrative Regulations" that

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[5] AS 44.62.020's second sentence reads as follows:

> . . . To be effective, each regulation adopted must be within the scope of authority conferred and in accordance with standards prescribed by other provisions of law.

[6] AS 44.62.030 provides:

> Sec. 44.62.030. CONSISTENCY BETWEEN REGULATION AND STATUTE. If, by express or implied terms of a statute, a state agency has authority to adopt regulations to implement, interpret, make specific or otherwise carry out the provisions of the statute, a regulation adopted is not valid or effective unless consistent with the statute and reasonably necessary to carry out the purpose of the statute.

The authority to adopt regulations to implement AS 46.03 has been explicitly given. See AS 46.03.020(10).

[7] The water quality standards chapter, 18 AAC 70, and the definition of "water" in 18 AAC 70.110(46) is not the only instance in which the Department of Environmental Conservation has substituted a narrower regulatory definition for the statutory definition of "waters." The department cites relevant sections of AS 46.03, including, presumably, the definition of "waters," as the statutory basis for two other regulatory programs--those dealing with solid waste management (18 AAC 60) and with the siting of solid waste management facilities (18 AAC 63)--but, for each of the programs, it has substituted the definition of "water" that includes the "does not apply to" exception for lined containers. See 18 AAC 60.910(55) [definition of "surface water" added in October, 1983], and 18 AAC 63.900(23) [definition of "'water' or 'waters'".] The department has not made the substitution in conjunction with its regulations for the oil and hazardous substance pollution control program (18 AAC 75). Instead, its regulation for that program, 18 AAC 75.900(62) and (70) cites the relevant statute, AS 46.04.900, directly.

"[o]perative provisions of a regulation must not be hidden in definitions." [8/] Rather than continue to draw distinctions within definitions that are not congruent with the legislative construction of the term in question, the agency should forthrightly set out the significant operative distinctions it proposes to make in separate substantive sections.

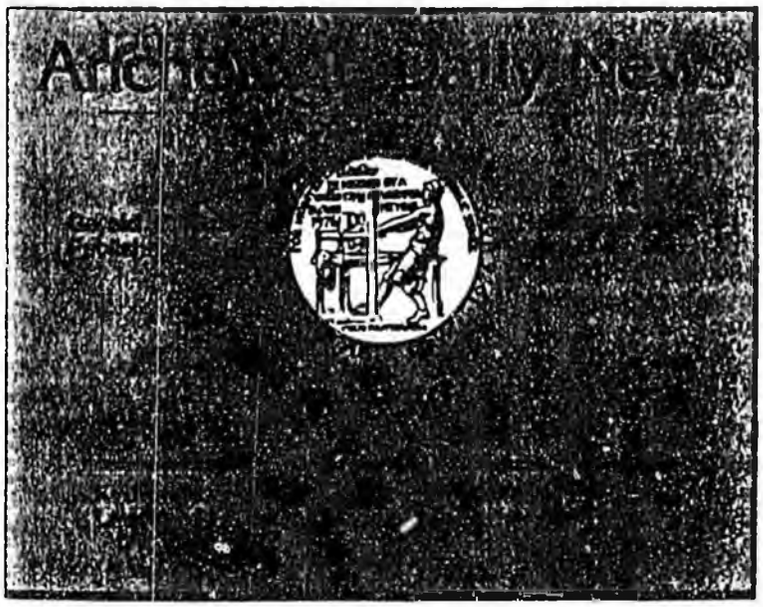
JBC:gc
92-490.glc

[8/] Drafting Manual for Administrative Regulations, 10th Edition, July, 1989, at p. 77.

Cliff - FYI.

In ADN yesterday.

Heather



Cleaner water?

Revisions may come too late

We'd like to be able to give Gov. Wally Hickel and state environmental regulators credit for agreeing to take another look at their proposed new water pollution rules. Trouble is, it looks like the state's new-found concern for dioxin dumping has a loophole big enough to drive a pulp mill through.

Here's the deal:

The federal government also is issuing a set of pollution standards, expected to be ready by Dec. 1. In writing the rules, the feds allowed each state, Alaska included, to specify what level of risk it is willing to accept for the release of toxic dioxin into its waters.

The federal rules will likely go into effect before the state Department of Environmental Conservation can review its own standards. So the federal rules will set Alaska's acceptable dioxin discharge at the higher risk level initially backed by the state — unless DEC Commissioner John Sandor tells the federal government otherwise.

He has until Monday to do so.

In the meantime, the permits for Southeast's two big pulp mills, which discharge dioxin as a byproduct, are up for renewal now. Because the new permits will likely be based on what the state tells the federal government, they will be issued at the higher risk rate. And because the permits are good for five years, the pulp mills may be able to continue dumping that level of dioxin, at least for that long, even if the state ultimately decides to make the standards more stringent.

So, yes, the public will get its say. But not until after the pulp mills — and the Hickel administration — get their way.

Understand that there is no perfectly safe level of exposure to a potential carcinogen like dioxin. Scientists instead try to determine what is an acceptable risk.

The federal Environmental Protection Agency recommends one cancer death per 1 million population as an acceptable risk; that is the standard it would set if a state didn't specify otherwise. Fewer than half the states have gone with the less rigid standard of one death per 100,000 population.

But here in Alaska, the two big pulp mills in Southeast claim that meeting the EPA's more stringent risk level would force one of them out of business. That's what prompted the state to rush through its proposal to set the state standard at the higher one death per 100,000 risk level.

When it heard about the state's decision to review its own standards, the EPA this week sent the state a letter, giving Alaska one more chance to change its mind about its preferred risk level.

While the bureaucratic process behind all this is mind-numbingly complex, the outcome affects you, us and the fish we eat.

Deciding what risk level to accept is a legitimate debate. But Alaskans haven't been allowed to finish that debate. Many of us could mount a powerful argument that the most rigid standards of safety should apply in this state. So many residents depend on fish for subsistence, and the fishing industry counts on wild and natural fish as its biggest selling point in an increasingly competitive market.

But the highest standards won't apply, at least not right away, no matter what our public hearings and public advisory groups say. Unless, that is, DEC Commissioner John Sandor says otherwise. By Monday.

State picks less stringent water-quality standard

DEC said the decision would allow pulp mills in Ketchikan and Sitka to continue operating. More stringent standards would have cost the mills about $300 million for pollution control devices.

By JAY STANGE

THE JUNEAU EMPIRE

State Department of Environmental Conservation Commissioner John Sandor has sided against conservationists and chosen a 1-in-100,000 probability as the acceptable cancer risk from pollutants in Alaska waters.

Sandor's decision would allow industry to discharge 10 times more suspected carcinogens in the state's water bodies than the more stringent 1-in-1 million level that the U.S. Environmental Protection Agency had planned to implement earlier this year.

"The (DEC) is attempting to develop the toughestand most complete health and water standards that Alaska has ever had, but at the same time develop standards that are technically feasible for business and communities," DEC said Monday in a prepared statement.

The standards would be used in deciding permits for industrial plants, mines and other operations that discharge wastewater into Alaska waters.

The department said Sandor's decision would allow the two pulp mills in Southeast Alaska to continue operating – a more stringent level would have required additional pollution control devices that could have cost the mills in Ketchikan and Sitka about $300 million total.

The state also said the EPA's more stringent tier of protection was a poor choice since it was higher than background levels of natural arsenic pollution in some parts of Alaska.

Sandor's choice came in response to an EPA request Nov. 9 for the state to designate which set of pollutant limits EPA would implement this winter as part of the National Toxics Rule, a required section of the 1987 Clean Water Act. Each state sets its own levels, and EPA said it would accept a range of risk levels from one in 100,000 to the one in 10 million.

The risk level is defined as the likelihood that a person could contact a disease or illness from pollutants in the water.

As part of a rewrite of its water-quality standards, DEC had proposed the 1-in-100,000 level in its draft in July. But recently – partly due to public outcry and partly from heavy EPA criticism of its scientific arguments – the department postponed a decision until advisory groups and the Legislature could participate early next year.

DEC's delay prompted an EPA letter requesting clarification on the state's preference for cancer-risk – separate from the other standards still to be decided, perhaps next year.

Marna Schwartz, water-quality project coordinator for SEACC, wrote Sandor on Wednesday and stated that the 1-in-100,000 level "fails to represent the overwhelming public sentiment regarding the cancer risk factor for carcinogens discharged into Alaska's pristine waters."

Tim June, co-founder of the Clean Water Alliance, said he was disturbed the Hickel administration had chosen the less stringent level before the public could be fully involved in the decision.

"If the people had a simple issue before them it would be a fairly simple choice," June said. "This is a social and economic decision for everyone and it's only fair it be left up to Alaskans."

DEC has received more than 1,500 letters regarding its proposed standards; Sandor said Monday they are evenly divided between supporters and critics.

Sandor said in his letter to the EPA that the state did not have time – since the public hearing process ended Monday – to incorporate the public testimony into its decision on the cancer risk level.

Opponents of DEC's standards say they fear some permits may be issued under the state's proposed cancer-risk rules – before the entire set of water-quality standards is adopted.

The Juneau-based Southeast Alaska Conservation Council and the Haines-based Alaska Clean Water Alliance had lobbied Sandor last week to reconsider his selection of a cancer risk level in light of the state's overall revisions to its draft water-quality standards.

It is possible that several major permits – including permits for the Ketchikan and Sitka pulp mills and for the proposed Kensington mine – could be issued in the interim.

Rick Albright of the EPA's Region 10 office in Seattle said Friday any permits that are issued between Dec. 1 and early next summer, when the state expects to finalize its full set of standards, could end up being modified.

"Whatever standards are more stringent would guide those permits. That's the most likely scenario," he said.

However, Albright also said it is also possible permits could be locked in for five more years at the less stringent risk level.

Sandor said he would favor extending existing permits until next year, when the state's final rules are in place. "It would seem to me it would make common sense to extend (the permit reviews) and issue them in May or June or July when the state regulations are out and final."

Anchorage Daily News

Gerald E. Grilly
Publisher

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Michael Carey, Editorial Page Editor
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Acceptable risk?

House committee must get answers

John Sandor, commissioner of the state Department of Environmental Conservation, had until Monday of this week to change his mind about what level of health risk Alaskans are willing to accept when it comes to water pollution. Mr. Sandor decided — for all of us — that Alaska will stay with a higher rate of risk from toxic pollutants than that recommended by the federal Environmental Protection Agency.

Thursday afternoon in Anchorage, the House Resources Committee will have a chance to ask DEC officials why.

Why, for example, did the DEC announce it would reconsider its proposed new water-pollution regulations, then tell the federal government to go ahead and use that same controversial risk level in new federal rules about to be issued?

Did the DEC think no one would notice it was saying one thing and doing another?

Did the DEC consider any of the public comments that came in, right up to the day Mr. Sandor gave the federal government the go-ahead?

Can the DEC explain what the higher level of pollution will mean to two crucial industries here in Alaska: fishing and tourism?

Finally, the committee might want to ask a general, philosophical question about the mission of the DEC. The agency recently announced it would take into account businesses and jobs when considering environmental regulations. Somebody needs to think about the economy, no doubt about it. But if the DEC puts the economy first, just who is left thinking about the environment?

Right now, it looks like the House Resources Committee.

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Cleaner water?

Revisions may come too late

We'd like to be able to give Gov. Wally Hickel and state environmental regulators credit for agreeing to take another look at their proposed new water pollution rules. Trouble is, it looks like the state's new-found concern for dioxin dumping has a loophole big enough to drive a pulp mill through.

Here's the deal:

The federal government also is issuing a set of pollution standards, expected to be ready by Dec. 1. In writing the rules, the feds allowed each state, Alaska included, to specify what level of risk it is willing to accept for the release of toxic dioxin into its waters.

The federal rules will likely go into effect before the state Department of Environmental Conservation can review its own standards. So the federal rules will set Alaska's acceptable dioxin discharge at the higher risk level initially backed by the state — unless DEC Commissioner John Sandor tells the federal government otherwise.

He has until Monday to do so.

In the meantime, the permits for Southeast's two big pulp mills, which discharge dioxin as a byproduct, are up for renewal now. Because the new permits will likely be based on what the state tells the federal government, they will be issued at the higher risk rate. And because the permits are good for five years, the pulp mills may be able to continue dumping that level of dioxin, at least for that long, even if the state ultimately decides to make the standards more stringent.

So, yes, the public will get its say. But not unti after the pulp mills — and the Hickel administratio — get their way.

Understand that there is no perfectly safe level o exposure to a potential carcinogen like dioxin Scientists instead try to determine what is a acceptable risk.

The federal Environmental Protection Agenc recommends one cancer death per 1 millio population as an acceptable risk; that is the standar it would set if a state didn't specify otherwise. Fewe than half the states have gone with the less rigi standard of one death per 100,000 population.

But here in Alaska, the two big pulp mills i Southeast claim that meeting the EPA's mor stringent risk level would force one of them out o business. That's what prompted the state to rus through its proposal to set the state standard at th higher one death per 100,000 risk level.

When it heard about the state's decision to revie its own standards, the EPA this week sent the state letter, giving Alaska one more chance to change it mind about its preferred risk level.

While the bureaucratic process behind all this i mind-numbingly complex, the outcome affects you, u and the fish we eat.

Deciding what risk level to accept is a legitimat debate. But Alaskans haven't been allowed to finis that debate. Many of us could mount a powerfu argument that the most rigid standards of safet should apply in this state. So many residents depen on fish for subsistence, and the fishing industr counts on wild and natural fish as its biggest sellin point in an increasingly competitive market.

But the highest standards won't apply, at least no right away, no matter what our public hearings an public advisory groups say. Unless, that is, DE Commissioner John Sandor says otherwise. B Monday.

Pollution rules get 2nd look

State scraps plan to ease water rules

By KIM FARARO
Daily News business reporter

The state has decided to scrap proposed revisions to its water-pollution rules that would have allowed some of Alaska's biggest businesses to dump significantly more pollutants into waterways than the federal government recommends.

Department of Environmental Conservation official Dave Sturdevant said his agency would start the process of revising the rules again, and he expects the next set of proposed regulations will allow less pollution.

Sturdevant said it was especially likely that limits for discharges of toxic dioxin and carcinogenic arsenic would be stiffened. He said the new proposed rules would not be issued until next year.

The DEC had suggested the looser standards to help companies and developers who complained that many environmental regulations were overly protective and could needlessly cost them millions of dollars and force layoffs.

The state initially started the review to provide relief to the large Sitka and Ketchikan pulp mills, but then broadened the changes to help other businesses.

The original proposal would have:

- Allowed the pulp mills to dump 85 times more dioxin than federal regulators recommended.
- Permitted two proposed Juneau-area gold mines to release 250 times more arsenic than the EPA recommended.
- Allowed Alyeska Pipeline Service Co. to continue to release hydrocarbons that could include carcinogens into Port Valdez from its giant oil-tanker terminal.

Even though the state is rethinking its revisions, it may already have helped the pulp mills escape the toughest regulations they faced — the rules written into draft federal permits issued in March.

As a result, the mills may be allowed to discharge significantly more dioxin than the federal government wanted although less than the state's proposed water-pollution rules would have permitted.

Even though the state is rethinking its revisions, it may already have helped the pulp mills escape the toughest regulations they faced.

The federal and state governments share responsibility for water-pollution permits. The U.S. Environmental Protection Agency writes the permits based on state water-pollution limits.

Because Alaska doesn't have a dioxin limit for discharges into marine waters, the EPA picked a number that would have been expected to result in one extra case of cancer in every 1 million people. The state recently asked the EPA to loosen the limit to a level that would result in one extra case of cancer for every 100,000 people — at least until the state comes up with its own standard.

The EPA agreed to try because the agency encourages states to decide what risks they want their residents exposed to. But the number is part of a broad package of standards called the National Toxics Rule, which has yet to receive the Bush administration's blessing.

Harold Goren of the EPA's Seattle office said that if the Toxics Rule is adopted, the agency will issue the pulp mill permits based on the looser dioxin limit. Although the state can choose a stiffer limit when it rewrites its own water-pollution rules next year, Goren said it could take years to change the permits.

Gregory Kellogg, another EPA official said the agency wants to issue the new permits as soon as possible, in part because they will allow less pollution overall than now and put controls on dioxin for the first time.

The mills had said complying with the EPA's original draft permits would have cost them tens of millions of dollars and

Spokesmen for the two mills could not be reached Friday night.

The state's own proposed dioxin limit — part of the suggested water-pollution revisions — was even looser than the one that it picked for the National Toxics Rule. DEC officials said it would likely have allowed the mills to continue to release as much dioxin as before.

But that proposed limit and others drew loud criticism from some fishermen, legislators and a large group of environmentalists. Later, the EPA also criticized the revisions saying the state had ignored recent scientific studies.

It was that statement that recently spurred Gov. Wally Hickel to ask the DEC to reconsider its decisions and make sure it could justify its choices. The agency said it would, and then announced Friday that it wanted to start over again.

This time, the agency says, it will consult with a panel of business people, fishermen, environmentalists and others when revising the rules. The agency said it will take nominations for committee members until

SOUTHEASTERN

Apr 10 1992

PUBLIC WALKS OUT ON WATER QUALITY HEARING

HAINES — Residents here unanimously got up and walked out of a recent Department of Environmental Conservation public hearing on proposed changes to state water quality standards.

The walkout by about 75 conservationists, gillnetters and Native leaders occurred during an explanation of the changes by DEC representative Dave Sturdevant.

Critics fear DEC's proposals would put human health and valuable fisheries at risk.

Gillnetter Norm Blank called for the walkout to "show the state of Alaska and the governor what we think of what they're trying to do."

Later, Blank said the protest was unplanned.

"People are angry and frustrated," he said. "It occurred to me, here we are at another hearing. We all have our little speeches and they're not going to listen. . . . This may get their attention in Juneau."

The most controversial proposals would redefine standards allowing industrial mixing zones and establish lower "human health criteria" for some chemical compounds than those set by the federal Environmental Protection Agency.

The mixing zone proposals would affect permits issued for the Kensington gold mine, located 35 miles south of Haines and adjacent to the Point Sherman fishery.

Haines' city and borough governments are opposed to the changes. So are Native, fishing and conservation organizations.

Residents also oppose a DEC proposal to base pollutant limits on an increased risk of cancer of 1 in 100,000. Sturdevant said the risk of getting hit by lightning is three times as great as the risk of getting cancer under the pollutant limits the state proposes.

A tighter standard "is not bad for the average citizen, but is bad for industry," Sturdevant said. "It will cost them more."

Haines residents questioned that balance.

"Whose idea is it to minimize impacts on industry and maximize impacts on public health?" Peter Goll asked.

— *Bonnie Hedrick*
Chilkat Valley News

6 OCTOBER 1992
Anchorage Daily News

EPA opposes looser water regulations

The Associated Press

JUNEAU — Federal officials reviewing the Hickel administration's proposal to ease state water-quality standards say several elements of the plan are inadequate.

In a memo sent to the state Department of Environmental Conservation last week, officials of the Environmental Protection Agency in Seattle outlined several problem areas:

• A proposal to use 5.2 pounds a year as the average fish-consumption rate for Alaskans in a complicated formula that assesses the danger of eating dioxin-contaminated fish. Dioxin is a carcinogen. State fisheries officials say 78 pounds is more realistic, and that people in subsistence communities often eat more than 400 pounds of fish annually.

• A proposal to allow 250 times more arsenic in waters than is suggested by EPA guidelines. The state said the EPA arsenic levels are more strict than the standards for half the wells in Fairbanks.

• Unclear language in regulations governing "mixing zones" — areas where a pollutant is mixed with clean water in a channel or other body of water to dilute its toxicity.

Sally Marquis of the EPA in Seattle said the agency hopes the state will reconsider some issues. Some of the regulations cannot be approved as they are written, she said.

Within days after receiving the document, state officials extended the public comment period on the regulations for the second time, to Oct. 31. The old deadline had been Friday.

The rewrite of the standards has been under way for two years. State officials have said they want the standards to balance economic and environmental concerns, but critics have claimed they represent a wholesale sellout of environmental protection to industry.

Anchorage Daily News

Gerald E. Grilly
Publisher

WINNER PULITZER PRIZE 1939 GOLD MEDAL FOR PUBLIC SERVICE 1976

Howard Weaver
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Polluted waters

Let us eat clean fish

What a strange land we live in, where the state government would push to allow the maximum possible level of poisons in our waters.

That, plainly, is what the Alaska Department of Environmental Conservation has proposed.

You might ask why. Surely our state leaders care about the amount of cancer-causing agents in our waters. Here's the explanation two state legislators, Democrats Kay Brown of Anchorage and Niilo Koponen of Fairbanks, came up with in a letter to the department:

"DEC appears to have simply assumed that Alaskans wish to be subjected to the greatest possible risk anticipated by federal law. We do not share this assumption."

Nor do we.

Those who would benefit from the state's proposals include pulp mills, two gold mines and Alyeska Pipeline Service Co. Does it sound like a good idea yet?

Federal Environmental Protection Agency officials are meeting with state officials this week to talk about the federal agency's concerns — that proposed state standards for arsenic are too lenient, and that the threat of exposure to cancer-causing dioxin is worse than the state believes.

One of the state's assumptions is that individuals are unlikely to eat more than five pounds annually of contaminated fish. That's based on Fish and Game estimates that Alaskans eat between 30 and 300 pounds of fish a year.

Should we have to worry about where the fish we eat is coming from?

And most of all, should the state push the limits of our tolerance of cancer-causing agents in order to benefit industry? The answer seems obvious.

The federal EPA can override state rules, but that could be a lengthy process. Instead of forcing the national government to step in to protect Alaska's citizens, the state regulators should change the regulations to reflect proper priorities: human heath first, help for industry second.

Anchorage Daily News 10/22/92

SUNDAY, October 4, 1992 ANCHORAGE DAILY NEWS

Critics pan looser rules on pollution

By HUGH CURRAN
Daily News reporter

The Hickel administration's proposed loosening of water pollution rules will either give wings to Alaska industries trapped in environmental red tape or endanger animal and human life and ruin the state's fishing industry, depending on whom you listened to at a public hearing Saturday.

The Department of Environmental Conservation has recommended relaxing state water pollution regulations in an effort to minimize the effect environmental rules have on jobs and businesses.

The move was made after timber mills in Sitka and Ketchikan complained in March that tough new EPA draft permits could force them out of business.

The House Resources Committee scheduled the hearing after the proposed rules set off a flurry of protest around the state, and those who testified split into familiar battle lines.

Businesses that would benefit most from the changes, including the pulp mills and the coal industry, roundly supported the DEC plan. Environmental groups and representatives from the fishing industry called for greater legislative involvement in the plan and asked the DEC to scrap a proposal seen by opponents as scientifically shoddy and biased and to return to the drawing board.

Opponents and legislators also questioned DEC health-risk evaluations based on EPA estimates of five pounds of fish consumed

Please see Page B-2. HEARING

HEARING: Proposed changes in water-quality regulations bring debate

per person per year. They said the figure did not represent the reality of Alaska fish consumption that averages about 78 pounds a year.

"These proposals are the most poorly justified departmental changes I've ever seen," said Mike Wenig of the environmental group Trustees for Alaska. "The cost analysis is a joke. Much of it is based on the claims of the pulp mills. The legislature ought to pressure the DEC to go back to the drawing board and the legislature ought to get involved more directly."

"If there are certain problems, we can work within the system," said Karl Hanneman with the mining group Alaska Placer Development. "To ignore the whole package would be a shame."

"I think this dialogue is important, even though it'll all probably end up in court," said Becky Gay with the Resource Development Council.

DEC commissioner John Sandor defended the proposal as a way to balance the concerns of a clean environment with those of jobs and industry.

"This is a balancing act between economic impact and health impact," Sandor said.

The proposed changes would:

• Allow large pulp mills in Sitka and Ketchikan to dump 85 times more cancer-causing dioxin than federal regulators recommend.

• Permit the proposed A-J and Kensington gold mines in Southeast to release 250 times more toxic arsenic than the federal government is expected to suggest.

• Let Alyeska Pipeline Service Co. continue to release hydrocarbons that could include cancer-causing compounds into Port Valdez from its giant tanker terminal.

The changes would allow an increase in dioxin discharges to a level expected to cause one case of cancer for every 100,000 people. The state regulation would supersede proposed federal rules limiting dioxin discharges to the levels expected to cause one case of cancer in a million people.

"The DEC believes the cancer risk level of one case per 100,000 people is an acceptable risk," Sandor said.

Many of the estimated risk factors used by the DEC are based on EPA national estimates of five pounds of fish consumed by the average person in a year. Rep. David Finkelstein, D-Anchorage, was one of many who questioned the figure at Saturday's hearing.

"I know I and a lot of Alaskans eat a lot more fish than that," Finkelstein said. "It almost seems absurd how low the estimate is."

DEC and EPA officials said a new estimate of the amount of fish consumed was under consideration.

George Yaska of the Tanana Chiefs Conference, which represents 43 Native communities in the Interior, said more than just fish consumption should be considered.

"The water quality standards proposed provide tremendous concern on the part of the people of our region," Yaska said. "Beaver, muskrat, moose; I consider these absolutely necessary for any consideration."

Fish contamination would make the DEC's business and job concern pointless by ruining one of the state's largest industries, said Gerry McCune, president of the United Fishermen of Alaska.

"We're really concerned that the proposal will lead to the decrease of fish habitat and the erosion of the fish population," McCune said. "The UFA believes the plan lacks balance and foresight."

"Fish are like little sponges soaking up the pollution in the water," said Riki Ott with the UFA. "The cleaner the water, the cleaner the fish. It's as simple as that."

Ed Oetken of the Alaska Pulp Corp. said unless the state approves more lenient standards, proposed federal standards could ruin or close the Sitka and Ketchikan pulp mills, which provide jobs in southeast Alaska.

"The proposed limits would require the two mills to change their production process, which would cost millions of dollars and take years," Oetken said. "And there's no guarantee that we'd be able to make a product that anyone would want to buy after we're done."

A suggestion by Sandor that easing regulations on businesses now could help pay for an estimated $1.4 billion toward better sanitation facilities in rural communities was met with confusion by Finkelstein.

"I don't get it," Finkelstein said. "We're losing money on it. Something like the mining industry doesn't contribute to the state budget."

Replied Sandor: "The task force report shows that one of the most important ways to pay for something like this is for communities to have a strong economy. That can happen when some of these businesses pay property taxes."

"We don't even have property taxes in most of those communities," Finkelstein said. "I have no idea what you're talking about."

The state will not make a final decision on water-quality changes until the public comment period, which has been repeatedly extended, ends later this month.

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Keep Alaska clean

Don't water down regulations

The state of Alaska is entering dangerous territory with its decision to change environmental regulation from an effort to preserve a clean and healthy environment into a balancing act between pollution and employment.

Basically, state regulators want to reject the long-standing notion that a clean environment is the overriding, No. 1 priority. Instead, they propose a slippery balancing act that seeks to test whether jobs are worth trading for pollution.

Indeed, the whole point of broad environmental standards is recognition of the fact that such decisions cannot be made on a short-term jobs-vs.-smokestacks debate.

You will hear extended debate about whether it makes any real difference to lower water-quality standards from one cancer death per million to one cancer death per 100,000. You will hear proponents of the change talk about "choices," about letting citizens decide whether to allow greater pollution — at a pulp mill, for example — in exchange for more jobs.

Those arguments are too short-sighted to control this debate. Indeed, the whole point of broad environmental standards is recognition of the fact that such decisions cannot be made on a short-term jobs-vs.-smokestacks debate. Environmental policy is genuinely effective only when applied across borders, across industries, across regulatory departments.

Developers may be able to convince citizens or regulators that dirtier discharge from their mill will be more than compensated by additional jobs for local residents. But that may ignore downstream impacts on salmon fishermen, or the loss of tourism when trees near the plant turn brown and die, or the fact that pollution from their mill, when combined with the shipping terminal up the bay, adds up to far more than either individually might pollute.

Such decisions often ignore the fact that environmental damage is cumulative — that we may be trading jobs today for environmental health problems extending far into the future and lasting for generations.

In the long run, case-by-case pollution decisions have almost always resulted in widespread environmental damage. The Lower 48 states and most of the industrialized world tried that approach and it failed miserably. Enormous amounts of money and resources are now being expended attempting to fix those mistakes. (Some of the damage and death, of course, can never be remedied.)

Alaska has a chance to do better. Since we are starting out with a relatively clean slate, we can avoid those environmental consequences simply by insisting that we are not willing to trade our long-term environmental health for short-term development.

Does that mean there should be no development? Of course not. There must be — and, evidence firmly demonstrates, there will be.

Sensible environmental regulation stops dirty and damaging development, but doesn't close the door to reasonable progress. Mills, factories and mines all over the world have shown that they can develop the expertise to operate within the guidelines of strict environmental controls — but they also demonstrate that they probably won't do so unless they're forced to.

If the Hickel administration is allowed to dilute Alaska's tough environmental standards and turn the debate into case-by-case trades of cleaner water for more jobs, the inexorable result will be a patchwork quilt of environmental damage where we might have preserved broad regions of environmental health.

This is no modest or casual change in regulatory strategy. This is a fundamental shift in Alaska's commitment to environmental health. Alaskans should insist on sticking with strict, broad standards to preserve what is most precious about our state.

What you can do

The state Department of Environmental Conservation is accepting public comment until Sept. 30 on its proposed changes to Alaska water-quality standards. You may send your comments to the DEC, 410 Willoughby Ave., Suite 105, Juneau, 99801-1795.

ANCHORAGE, ALASKA, SUNDAY, SEPTEMBER, 13, 1992

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Pollution philosophy changing

DEC wants to weigh jobs, danger to health

By KIM FARARO
Daily News business reporter

The state is proposing to loosen rules governing water pollution, reflecting a radical change in philosophy about how much pollution Alaskans should tolerate.

Instead of writing rules based merely on how pollutants will affect the environment, state environmental leaders have decided the effect on businesses and jobs also must be considered.

■ **VALUES:** Economists weigh bottom line against environmental gains. **A-9**

The proposed water-quality rules are being cheered by some of Alaska's existing and proposed businesses. But environmentalists warn that the state is giving up its goal not to repeat the environmental mistakes other states made by allowing too much pollution to sully their waterways.

The rules are designed to protect waterways, fish and people from harmful pollution. In their proposed form, they would, among other things:

- Allow large pulp mills in Sitka and Ketchikan to dump 85 times more cancer-causing dioxin than federal regulators recommend.
- Permit the proposed A-J and Kensington gold mines to release 250 times more toxic arsenic than the federal government is expected to suggest.

Please see Page A-9. **WATER**

WATER: State agency changes philosophy on acceptable pollution

Continued from Page A-1

...Yet Alyeska Pipeline Service Co. continue to release hydrocarbons that could include cancer-causing compounds into Port Valdez from its giant tanker terminal.

The state's Department of Environmental Conservation says the rules should be loosened in some cases because the DEC questions the federal Environmental Protection Agency's science.

In other cases, as with dioxin, officials say they believe more stringent standards would bankrupt businesses. What that means, a top DEC official acknowledges, is that the agency is willing to allow people to take more of a chance of developing cancer or other illnesses in order to help companies that provide jobs — in many cases for the same people they expose to pollutants.

The DEC's Dave Sturdevant said that in revising the rules the DEC considered that people make choices every day — whether to eat meat or smoke cigarettes — that increase their chances of getting sick. The agency leaders, he said, feel this is just another choice: Is it worth providing the highest level of protection against industrial pollutants if that eventually means industry disappears or is weakened?

He said the DEC has decided it isn't most of the time.

"That philosophy should come as no surprise. Since ... Wally Hickel took office two years ago, department leaders he appointed have often said that economic factors must be considered in making decisions about the environment. If not, they said, the state would risk driving companies out of business and chasing away prospective developers at a time when one of Alaska's biggest employers — the oil industry — is slicing jobs.

For industry supporters, like Rollo Pool, the shift in attitude is a welcome change.

Pool, the spokesman for the Sitka pulp mill, said: "Until the Hickel administration came in in 1990 it was always, 'If we're going to err, let's err on the side of the environment.' (Now) people think the state is going to give the pulp mills everything they want. ... In our view what the governor is trying to give us is balance."

But environmental activists say the state's past stance was prudent, providing a high degree of protection to humans and the state's fisheries. They also worry the state may be a sucker for exaggerated claims of impending doom from companies that simply want to maximize profits.

"We're really concerned that the department is becoming the department of economic conservation, not environmental conservation," said Kevin Harun, the new director of the Alaska Center for the Environment. "Who's going to stick up for the environment if the DEC won't?"

He and other activists also say the DEC may be helping the state's economic health in the short-term, but mortgaging its future by dirtying the pristine waters Alaska's fishermen have bragged about in marketing campaigns.

The state will not finalize the water-quality rule changes until it finishes receiving comments from the public at the end of this month.

The DEC has not been coy about why it decided to publish proposed water-pollution rules now.

The new rules were born at the same time at least one of two Southeast pulp mills predicted it was literally being regulated to death.

That doomsday scenario was inspired by the EPA's proposal to crack down on pollutants the mill discharges by proposing new, stricter permits.

In drawing up the permits, the EPA relied on the state's existing water-quality rules. In the case of dioxin, the EPA imposed its own standard on the mills because the state has none. The EPA's proposed limit would have forced cutbacks in dioxin discharges.

Dioxin is best known for forcing the evacuation of the contaminated community of Times Beach, Mo., a decade ago. Since then, scientists have begun to question if dioxin is as potent a carcinogen as they once thought, but new animal studies suggest that even if it isn't, it might cause frightening changes in immune systems.

The EPA's draft permits, issued in March, set off panic at the mills. Company officials protested to the DEC that the rules would cost them each more than $100 million and might put at least one out of business. According to Sturdevant, the DEC's water-quality standards coordinator, that raised "a high level of concern" at the agency because the mills are major Southeast employers.

A month later, DEC Commissioner John Sandor, several staff members and two state lawyers traveled to EPA offices in Seattle. During those meetings, Sturdevant said, the agencies devised a set of possible fixes to the mills' problems.

Among the remedies they came up with was loosening state limits on dioxin, which is left over after the mills bleach pulp used to make rayon fabric.

Federal regulators told the state that it could set its own dioxin standard if it did so quickly. The EPA generally prefers that states decide how much cancer risk they will allow residents to bear, within certain limits.

The state had been considering changes to its water pollution rules for two years, but decided to speed up the review of the dioxin limit to help the mills. Regulators also ordered an independent study of how much the tougher regulations would cost the mills, but that analysis is not expected to be finished until the end of this month.

In the end, the state decided it would recommend boosting the discharge allowed to a level expected to cause one case of cancer for every 100,000 people. The proposed federal rules would limit dioxin discharges to an amount that could cause one case of cancer in a million people.

If the DEC also follows through on this and other proposals, the mills probably would not need to cut their dioxin discharges.

Once the state decided to speed up the dioxin review, Sturdevant said, officials figured they would also suggest changes in several other standards, especially those expected to help the A-J and Kensington gold mines.

The mines are wending their way through a complex permit process, and the department decided its new ideas would help move the projects along. The two Juneau-area mines would be among the state's largest if they are developed.

One state proposal would allow more arsenic to be discharged and, consequently, increase the risk to people who eat fish that pick up the pollutant. The arsenic would be released into Gastineau Channel, the water body bordering Juneau, where there is recreational fishing, and Lynn Canal, which supports a sockeye fishery within a mile of Kensington's proposed discharge pipe.

Sturdevant said that while the state wanted to help the mines, it based its proposal on science. The DEC argues that the EPA overestimated the dangers from arsenic in Alaska fish because the federal agency relied on studies of a more harmful form of arsenic.

The DEC also proposed changing the definition of water that can be regulated to make clear it wished to exempt waters containing certain industrial wastes, including oil-industry and mining wastes.

The change is expected to help the A-J and Kensington mines in their fight to create lakes to dump the rocks left over after the gold is extracted. The lakes would contain a toxic soup of heavy metals released when the rocks are ground up and cyanide added to the rocks to pull out hard-to-get gold.

DEC officials said the department knows that environmentalists who oppose the mines argue that the lakes fit the definition of water and should be regulated. They said the department hoped the wording changes would avoid time-consuming legal battles.

Yet another revision of the water-pollution rules will aid Alyeska, which operates the Valdez oil tanker terminal for British Petroleum, Arco, Exxon and four other oil companies.

Alyeska discovered through studies last year that it was probably discharging too much of a type of oily waste from the tanker terminal. Alyeska then wrote to the state to notify regulators that it felt the waste standard was too stringent based on current science and that the tests it was being asked to do weren't valid.

Alyeska also said in its letter that many other states allow significantly more of the waste in their waters.

The group of compounds worrying the company include some that a scientific panel has been pushing the DEC to carefully monitor — and limit if discharges were found to be high. The scientists on the panel advise the government on the Valdez terminal's water treatment plant. Their fear is that the oily waste includes carcinogenic Poly Nuclear Aromatic Hydrocarbons.

Sturdevant said the DEC took Alyeska's arguments to heart, although it never checked out the company's claims that other states are more lenient. The department agrees the hydrocarbon limit is outdated, and officials say that more current science endorsed by the EPA suggests it is more stringent than necessary.

As a result, the DEC proposes dropping the rule for those compounds entirely and possibly setting a limit it deems more reasonable later.

At least two of the scientists have strongly objected to the state's proposal. One of them, Thor Lyxyj, agreed the original standard was very stringent, but said that is a virtue in a state that relies so heavily on its fishing industry. He doesn't think Alaska should adopt other states regulations because many of them already have severely polluted waterways.

"The fact that somebody's killing himself doesn't say you should do the same thing," Lyxyj said.

Economists seek environment's bottom line

By WILLIAM K. STEVENS
The New York Times

Does environmental protection hurt the economy or help it?

The question is under hot dispute in the presidential campaign. The Democratic vice presidential nominee, Sen. Al Gore, argues that environmental protection boosts the economy and creates jobs; Vice President Dan Quayle, whose White House Council on Competitiveness has sought to reduce environmental regulations, says the Democrats' environmental policies would cost jobs.

But the answer to the economy-vs.-ecology question, says an emerging group of environmental economists, is far more elusive.

An Environmental Protection Agency analysis, for example, puts the cost of controlling and cleaning up pollution under federal regulations at more than $100 billion a year, or about 2 percent of the nation's total annual output of goods and services.

But like a number of other analyses, the study does not take into account the economic benefits of cleaner air and water. An analysis of benefits is under way, but not yet complete.

Nor does the study include protection measures that do not involve pollution control, like conserving the ecosystems that underlie all economic activity, such as water, soil, forests, fisheries, wetlands, wild plant species and the complex biological web that supports life itself. Gauging the costs and benefits of such measures is hard but essential.

Environmental economists argue that the economy is merely a subsystem of the planet's ecology, on which it depends for materials, energy and general sustenance.

"To me it's just as plain as the nose on your face," says Herman Daly, an economist at the World Bank and a proponent of the view that economies can flourish at steady state, without growth. Traditional economists, he and others contend, ignore this relationship, and with it the economic cost of depleting natural resources, degrading soils and otherwise insulting nature.

Until these "external" costs are reflected both in company balance sheets and calculations of national wealth, say Daly and his allies, the benefits of environmental protection will be seriously underestimated and the health of the economy will be overestimated.

This line of thought is starting to make some headway, as both the United Nations and the U.S. Department of Commerce move to include the costs of natural resource depletion as an adjunct to conventional accountings of national wealth.

Also, regulatory commissions in New York and other states are starting to require electric utilities to factor in the cost of emitting heat-trapping carbon dioxide when deciding how to generate energy.

Including such external costs favors Gore's side of the argument. But economic studies in general are not so clear cut. A number of economists say the value of environmental protection measures can be assessed only on a case-by-case basis.

Among the "good buys" are the air pollution controls enacted in the first Clean Air Act of 1970, according to a cost-benefit analysis by Dr. Paul Portney, an economist at Resources for the Future, a Washington research institute. The act placed the first limits on air pollution from smokestacks and motor vehicles. Portney found the benefits of the Clean Air Act have exceeded the costs.

His preliminary estimate suggests that the same is not true of the 1990 amendments to the Clean Air Act, designed to curb acid rain and air pollution in urban areas. Costs will be $29 billion to $36 billion a year by the year 2005, but benefits will probably range from $8 billion to $25 billion, he found.

Another good buy, in Portney's view, is the phasing out of chlorofluorocarbons that destroy the earth's protective ozone layer, which he calls "a small price to pay for insurance against what could be a pretty serious problem." Bad buys, in his book, include some toxic waste sites that pose little risk but will require tens of millions of dollars apiece to clean up.

The issue of economy vs. ecology is also complicated by the fact that environmental regulation distributes both costs and benefits unevenly.

On costs, for instance, Dr. Dale Jorgenson of Harvard University and Dr. Peter Wilcoxen of the University of Texas estimate that all federal environmental regulations adopted before 1990 will reduce the national economic output by 2.5 percent by the year 2000.

But the economy does not suffer uniformly, they found; the burden is being borne disproportionately by the chemical, coal mining, motor vehicle, refining, primary metals and paper industries.

Jorgenson and Wilcoxen calculate, for instance, that the long-run output of the automobile industry has been cut by 15 percent as a consequence of controls on motor vehicle pollution.

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BY GARRY TRUDEAU

DEAR, IF YOU

Juneau Empire Wed., Sept. 2, 92

State plan would dirty water qu

By ERIC HOLLE and KATEY PALMER

The state is expediting its review of water-quality standards for the benefit of pulp mills, mines and other polluting industries unwilling to meet more stringent federal standards.

Alaska has always been a place of clean water and abundant fish. Alaskans' health, subsistence lifestyles and much of the state's economy, especially tourism and commercial fishing, depend upon maintaining its waters in pristine condition.

However, if Gov. Walter J. Hickel and the Alaska Department of Environmental Conservation have their way, Alaska will go the way of Boston Harbor, the Great Lakes and other infamous toxic wastelands.

Our water and fish will become polluted with dangerous and illegal concentrations of dioxin, heavy metals, arsenic, chloroform and other toxic chemicals.

DEC is "expediting" the current public review of Alaska water-quality standards for the benefit of pulp mills, mines and other polluting industries that are not willing to meet more stringent standards soon to be imposed by the federal Environmental Protection Agency.

Many of the new, weakened standards are those proposed by the industries themselves, like Alaska Pulp Corp., which routinely dumps illegal concentrations of dioxins into the salmon-rich waters near Sitka.

Public outrage has forced DEC to hold more public hearings and to extend the public comment period until Sept. 30. However, this will still exclude commercial fishermen from the review process, even through their livelihoods will be severely impacted by weakened water-quality standards.

DEC Commissioner John Sandor claims the proposed lowering of water-quality standards is justified in light of "new scientific evidence." DEC's issue papers on the changes, however, more closely resemble promotional literature for polluters than scientific documents.

They state, for example, that "it is not possible to propose dioxin human-health criteria without taking both political and public perception into account. Science clearly is only part of the dioxin dilemma."

Called "one of the most toxic materials known" by Dow Chemical Co., dioxin is well known to Vietnam veterans who are suffering the effects of exposure to Agent Orange. DEC's issue papers on dioxin rely heavily on the work of the Center for Disease Controls' Dr. Vernon Houk, the man notorious for suppressing scientific studies of veterans exposed to the defoliant.

Houk's "work on the CDC study has been thoroughly discredited," according to Admiral Elmo Zumwalt, commander of U.S Naval Forces in Vietnam.

In calculating human health criteria for pollutants, DEC uses unrealistic values for various factors in order to arrive at the highest pollutant concentration they think the public will tolerate.

They use a cancer risk factor 10 times higher then EPA's, and a bioconcentration factor 70 times higher than that used by the state of Minnesota. DEC uses a per capita annual fish consumption rate of five pounds, in spite of Alaska Department of Fish and Game data that show Alaska's fish consumption to be six to 60 times higher.

Using realistic values for such factors, independent toxicologists predict three cases of cancer for every 100 people exposed to the DEC's proposed dioxin concentration. The cumulative or synergistic effects of dioxin with other pollutants could lead to even higher cancer rates.

In its attempt to accommodate mining interests, DEC is redefining "mixing zones," the euphemism for aquatic industrial sewers. These are currently prohibited if "pollutants could bioaccumulate; cause carcinogenic, mutagenic, or teratogenic effects; or otherwise present a risk to human health."

DEC proposes to allow pollutants to bioaccumulate in food chains up to a level that causes human health effects at the location of the mixing zone. Although Alaska spent $13.6 million last year to promote Alaska seafood, they now propose changes in law that would allow fish to become tumor-ridden and laced with heavy metals.

Moreover, the DEC is setting the stage for a public health catastrophe that will continue unabated until victims can prove that mixing zone pollutants caused their diseases.

Other proposed changes are equally disturbing. Unlined toxic wastewater-treatment ponds would be exempt from water-quality regulations. Placer miners could dump arsenic into freshwater mixing zones at concentration 2,778 times higher than that recommended by the EPA.

Water-quality standards for total hydrocarbons have simply been deleted, and groundwater standards have been weakened.

DEC justifies many of their proposed changes for pollutant standards by comparing them to standards in polluted states that are trying to clean up their water. By a few simple changes in law, pollution that today is considered toxic and illegal would tomorrow be considered safe and legal.

Since 1949, Alaska has had the most stringent water-quality standards and the cleanest water in the nation. DEC has a mandate to safeguard our water, food and fisheries, our lives and livelihoods. They must not weaken laws to open a door for irresponsible industries or redefine today's toxics as tomorrow's food.

Public health policy must not be based on the profit margins of pulp mills and gold mines. Water is life.

●●●●●

Eric Holle and Katey Palmer are biologists living in Haines.

LETTER

Sign ordinance fairly serves the public interest

Dear editor:

Because I was personally involved with the recent review and revision of the city-borough sign ordinance, I would like to offer your readers some additional information that was omitted from the [illegible] improvement.

In addition, the old ordinance was overly restrictive.

For example, it regulated what business owners could display on the inside of their store windows. Local merchants invest considerable time, effort and money to develop attractive and pleasing window displays. It's in their best interest to ensure that their business looks pleasing and attractive to the public – both inside and outside. Business owners should have the right to [illegible] nance for the downtown area and historic district.

The newspaper article failed to mention that the revised ordinance was the product of more than nine months of consensus building, discussion and interaction between the staff, and numerous public meetings. That was reflected in the fact that only one person expressed concern or opposition to the assembly during the public hearing on the new sign ordinance.

Finally, I [illegible]

" I went on to complete that statement by saying "... now that businesses have the flexibility and incentive to invest in professionally done signs, replacing some of the existing signs that were not professionally done and aren't particularly pleasing."

I supported this ordinance because I honestly believe that it will result in improvements to the quality, appearance and aesthetics of many of the [illegible]

LETTERS / FORUM

Hickel's advice to Earth Summit ignored at home

By RIKI OTT

COMPASS
POINT OF VIEW FROM OUR COMMUNITY

CORDOVA — The Hickel administration is proposing revisions to Alaska's water quality standards that will lead to statewide degradation of Alaska's waters.

The Department of Environmental Conservation has gone on record stating that these new water quality standards are being implemented and expedited for the benefit of the timber, mining and oil industries.

Without strong standards, the high quality of Alaska's waters will deteriorate — along with the high quality of Alaska's fisheries resources. Gov. Hickel recognized this when he told the board of United Fishermen of Alaska in February that maintaining strong water quality standards was "a protection of one of the greatest industries Alaska has."

Seafood is Alaska's No. 1 export. Alaska's seafood production ranks first among states and fifth among nations. The seafood industry is Alaska's largest private sector employer, providing jobs for one in 20 Alaskans (or 70,000 seasonal or 33,000 year-round jobs). The seafood industry is Alaska's second-largest revenue generator ($31.1 million in taxes in 1991).

In February this year, the state went to bat for its seafood industry when Consumer Reports published an article titled "Is Our Fish Fit to Eat?" The report advised against eating salmon, among other fish, because of contamination with PCBs and heavy metals. The state spent $13.5 million last year to market "pure" Alaska salmon. Strong water quality standards played a key role in returning consumer confidence to Alaska seafood.

Yet now the state administration is proposing to greatly reduce the water quality standards to allow more dumping of toxic wastes in Alaska's waters. The state's proposed revisions would:

- Allow degradation of fish habitat;
- Lead to reductions in fish populations; and
- Erode consumer confidence in Alaska's seafood quality.

For example, the state wants to allow *unlined* mine tailings ponds and other wastewater treatment facilities to contain concentrations of toxic wastes that exceed state water quality standards. Water in these facilities could contaminate ground and surface water resources, and find its way into drinking water supplies and fish spawning areas.

In addition, the state wants to relax regulations regarding mixing zones. Mixing zones are areas of "legalized" pollution for purposes of dilution of industrial effluent. The Hickel administration is proposing to allow discharge of potential carcinogens into mixing zones as long as the compounds are not proved to be cancer-causing *in humans at the location of the mixing zone*.

This standard is virtually impossible to prove. It also ignores effects on fish and other aquatic life, and it ignores health effects on downstream consumers who do not live in the vicinity of the mixing zone. Further, the DEC wants to allow mixing zones in fish spawning areas. (Alaska, unlike almost all other states, does not prohibit discharge of lethal levels of toxicants into mixing zones.)

Further, the DEC wants to ignore the impact of particulate hydrocarbons in the water column under the erroneous assumption that only dissolved hydrocarbons are picked up by aquatic life.

Finally, the DEC is willing to expose seafood consumers to greater cancer risk by proposing a dioxin (the active ingredient in Agent Orange) criterion in marine waters which is about 10,000 times less stringent than EPA's standard, and an arsenic criterion in fresh water 3,000 times less stringent.

The Hickel administration's efforts to decrease protections for Alaska's waters diametrically oppose national and international efforts to increase marine environmental protections. One of the principles adopted at the Earth Summit in Rio, and supported by the United States, seeks to control land-based sources of pollution that degrade the marine environment.

In his speech at the Earth Summit, Hickel called on the "nations of the world ... to protect our fisheries from the waste that comes from greed." The place to start is in our own back yard. Alaska's industries must internalize environmental costs under the "polluter pays" principle.

Keeping Alaska's water clean is a top priority for the seafood industry. Yes, it may cost the timber, mining and oil industries money. But if keeping Alaska's water clean does not remain a top priority for all Alaskans, it may cost us our seafood industry.

Riki Ott chairs the Habitat Committee for United Fishermen of Alaska. She fishes commercially and has a master's degree and a doctorate in marine pollution.

world's greatest fraud; i.e., exploitation of the ignorant to line the pockets of a few."

Gestapo-like tactics being used in Juneau

JNU 7/31

Flood of comments delays water regs

By JAY STANGE
THE JUNEAU EMPIRE

An overwhelming number of complaints and requests from the public have caused the state Department of Environmental Conservation to add more than six weeks to the public comment period for its proposed changes in water-quality standards.

Critics say the proposed standards would greatly relax the amount of wastewater products that could be legally pumped into Alaska's waterways, including suspected carcinogens vastly above the least stringent standards used by the U.S. Environmental Protection Agency.

"We are flooded with phone requests for extension and for info on the WQS (water-quality standard) revisions from people and organizations all over the map," wrote the DEC's Dave Sturdevant in a Tuesday memo to state and federal regulators.

Sturdevant – the primary writer of the new state water standards, required by amendments to the 1990 Clean Water Act – had said in past weeks that the final version of the state's standards were under deadline pressures and public comment could not be extended.

The new deadline for public comment is Sept. 30, compared with the old deadline of Aug. 10. In addition, a tentative hearing date is scheduled for Haines on Sept. 24, where many commercial fishermen have become enraged at the Kensington mine and DEC over a proposal for a mixing zone at Point Sherman.

A mixing zone is an area where wastewater exceeding allowable levels of contamination is diluted in a natural waterway.

Point Sherman is a popular commercial fishing area for Haines fishermen.

The complaints over the original public comment period, planned for the height of summer when many fishermen are on their boats instead of in packed hearing rooms, were far in excess of any other regulatory change contemplated at DEC, said the agency's environmental quality director, Mike Menge.

"These changes reach statewide on placer mining, fish processing, mining, storm water," Menge said today. "They will affect every aspect of life here in Alaska."

Though groups involved in commenting on the proposed changes are pleased the state gave them six weeks of breathing room, they are still not satisfied.

The Southeast Alaska Conservation Council wrote one of the first letters complaining the state had not made copies of the proposed regulations available to the public. The group's attorney, Buck Lindekugel, said today his group wanted the comment period extended to November.

"They (the state) are still missing the issue here, which is that summertime is the time people most affected, including fishermen and those in the tourism industry, have to make their living," Lindekugel said.

Lindekugel said his group is also unhappy that the public hearing dates, set for Juneau at 7:30 p.m Aug. 3 at Centennial Hall, were not bumped later.

Meanwhile, Menge said the attorney general's review of the new standards after the comment period could be expedited.

Meanwhile, the EPA is waiting for the new state standards before it can issue wastewater discharge permits for the proposed Kensington and Alaska-Juneau mines.

So the added public comment period will delay final EPA permit approval for the two mines, especially the Kensington, which is scheduled for a decision on its city-borough mining permit Oct. 15.

The city-borough planning commission on Thursday voted – to the great displeasure of the mine's developer, who wanted the permit by the end of August – for that October schedule.

The mine's objections to the city-borough permit review schedule are apparently a moot point since the EPA's discharge permit is now likely to take much longer.

Though Frank Bergstrom, environmental compliance manager for one of the Kensington Venture's partners, Echo Bay Alaska Inc., said the city-borough schedule is too slow, the delay in DEC's public comment period does not concern him.

"I support the state taking the appropriate amount of time and appropriate process for good water-quality standards," Bergstrom said.

Bergstrom said the company's proposal to pump Kensington wastewater into the Lynn Canal mixing zone may be modified by a change in the proposed state water standards, so the company is not moving ahead with major decisions until the EPA permit is issued.

FAIRBANKS

Daily News-Miner

The Voice of Interior Alaska

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Water quality proposal favors industry

Once it's dirty it costs billions to clean up, if at all. I'm talking about water—a universal requirement for life and one of Alaska's greatest assets. From an Eskimo's gift to the soul spirit to holy baptism and everything in between, we rely on clean water.

As residents we know Alaska is the last best place and many of us shoulder an obligation to see that it stays that way. Gov. Hickel's confused, on again, off again stripping of the water quality standards is clearly an immediate threat to Alaska. If we ever needed an example of political expediency paving the way for industrial pollution, we wouldn't look further than the Department of Environmental Conservation's recommendations on the National Toxics Rule.

Its effect is to ease the way for accelerated resource extraction the state has proposed to lower the limits of arsenic, dioxin, and hydrocarbons in our water. These carcinogens are residues from mining operations, pulp mills, and the oil companies. They are released into rivers and lands when industry says it would cost too much to contain them.

After severe criticism from ordinary citizens, conservationists, and the fishing and tourism industries, DEC has backed away from, but not repudiated, its initial language. As proposed, revisions of the water quality standards would permit pulp mills at Sitka and Ketchikan to dump 85 times more cancer-causing dioxin than federal regulations recommend. In Juneau, the gold mines would get the green light to discharge 250

GUEST OPINION

Douglas Vaden

times more arsenic than the federal government is likely to suggest. The Alyeska pipeline terminal in Valdez would be allowed to continue releasing hydrocarbons, oil, and grease into Prince William Sound. If regulations were adopted as originally proposed, Alaska's reputation for clean water would become a memory.

John Sandor, DEC commissioner, rationalizes this strategy as a balancing act between economics and health. Tipping the scales in industry's favor, Sandor has quietly asked the U.S. Environmental Protection Agency to loosen the limit on dioxin from one cancer in every 1 million people to one case in 100,000. Without comment, without notice, Sandor is assuming that Alaskans agree this is an acceptable risk level. DEC bases this standard on estimates that Alaskans eat five pounds of fish a year. Data gathered by the Department of Fish and Game suggests Alaskans generally consume between 20 to 300 pounds of fish a year. In aligning itself with industry DEC is betting Alaskans' future health for short-term economic gain.

Alaska's fishing industry is prized for both abundance and purity. Each value is threatened when Alaska's waters are degraded. Whether the silver market perceptions bench the fishermen the result is the same. Millions in lost wages and another black eye for Alaska. Tourism brings additional millions of dollars into the state each year. Visitors come north because they think the land and water haven't been spoiled yet. Imagine the word passing through the RV parks: "We're too late, we should have come last year. Except for the glaciers it's as polluted as New Jersey."

Last month when this newspaper approved DEC's proposed changes a companion editorial acknowledged the Interior Alaska Ecumenical Peace with Justice Council's positive efforts to raise awareness of world issues. A litany of social ills, from violence to poverty to HIV, were cited as topics for thoughtful public discussion. Glaring in its omission was any mention of environmental justice. Though it does indicate a certain editorial consistency, the failure to acknowledge Alaskans' trust in unbiased scientific research cannot go unchallenged.

If we in Alaska fail to plan for our long-term residency we will join just as surely millions of environmental refugees who are now pressing in on their not-so-well-off neighbors. In Africa and Asia an estimated 10 million people have lost their homelands through the collapse of natural systems. Human-induced deserts, droughts, floods, landslides, destruction of forests, croplands and coral reefs have impoverished whole cultures.

While much of the rest of the world is coping with a biosphere under seige, Alaska still possess large unfragmented watersheds and coastlines that serve intact ecosystems. We serve the future when we consider genetic diversity. If prophets of infinite growth like Sandor are allowed to dictate water policy, images of "pristine Alaska" will exist only in photographs. Instead of giving industry a license to pollute we should demand that industrial cleanup be figured into the cost of doing business. Anything less should be considered a threat to our national security.

Indeed, some defense analysts contend that the deterioration of the environment must be considered as one of the gravest threats facing all people. In Alaska this means that weakening the water quality standards holds the potential to erode the biological foundations of human life. Rather than spur economic development it will create economic instability, injustice and violence.

Stung by criticism, DEC now wants to start again with a new set of standards that will address scientific data and appropriate risk levels for human health. This time the agency will consult with a panel of business people, fishermen, conservationists and others. DEC is taking nominations for this committee until the end of the month. You may submit your name by writing to DEC, 410 Willoughby Ave., Suite 105, Juneau, AK 99801-1795.

Douglas Vaden is an Eagle resident who followed mining and water quality issues.

Critics attack state water-quality standards

Juneau Empire

By JAY STANGE Tues, Aug 4, 92
THE JUNEAU EMPIRE

In front of 80 people at a crowded and hot public hearing Monday night, Haines resident Tim June unceremoniously yanked his long-sleeve shirt up to his armpits.

His turn to testify had come.

From his right nipple, all the way across his chest and around his back was a quarter-inch-wide reddish scar. Another large cut on his abdomen showed another cancer autograph, a souvenir from a bout with the deadly disease 20 years ago.

June's dramatic testimony before the crowd and Department of Environmental Conservation officials came at a hearing on proposed changes to the state's water-quality standards. The proposal for regulating carcinogens allowed in Alaska waters includes an assumption that an acceptable risk of cancer is one in 100,000 people.

The U.S. Environmental Protection Agency allows states to select an appropriate cancer risk ranging from one in 100,000 to one in 10 million. Alaska has proposed the least stringent factor of one in 100,000 for regulation of dioxin, arsenic and chloroform – all suspected caremogens.

June said he was outraged. The cancer victim has spent the past three weeks reading technical manuals, speaking to EPA and DEC officials, and taking [illegible] message to the streets.

"Where did I get it (cancer) from?" June asked as he pulled his shirt back down over his scars. "The best guess I can come up with after thinking about this for 20 years, probably every day of my life, was I made the mistake of living close to Kaiser Steel in Southern California.

"I was one of the one in 100,000 from that plant ... I mean where are we going with these regulations?"

At Monday's hearing at Centennial Hall, an overwhelming number of those in the audience seemed to share June's sentiment. Representatives from the Sierra Club Legal Defense Fund, the Southeast Alaska Conservation Council, Alaskans for Juneau and others spoke up against the plan to change the state's water-quality regulations.

DEC is mandated by amendments to the federal Clean Water Act of 1990 to rewrite its standards for how much pollution is acceptable in Alaska's waters. If the state does not, the EPA is ready and willing to do so from Seattle.

The state standard will be used by the EPA to issue new permits for pulp mills in Ketchikan and Sitka and for proposed mining activity in Juneau, among other activities statewide.

Critics of DEC's changes, including many of the environmental groups speaking at the meeting Monday, believe Gov. Walter J. Hickel's administration, through DEC com-

Please turn to Water, Page 8

Water...

Continued from Page 1

missioner John Sandor, has been politically motivated to create lax water-pollution standards.

Sandor was a few rows back of June's scar tactics Monday.

After the hearing, Sandor said the proposal did not involve a cabinet level action but was developed by DEC water-quality staff on their own initiative.

"I'm confident that the professionals (DEC staff) will come up with their professional recommendations and we who are involved with policy will be able to deal with those," Sandor said. "And within the limits of that, I'm absolutely positive that the EPA is not going to simply blindly accept what any state proposes."

Sandor said the proposed regulations would protect the public interest.

Some in the audience agreed.

Chuck Achberger, executive director of the pro-mining Alliance for Juneau's Future, said there was room for protecting the environment and allowing industry to operate. Achberger supported the regulations as proposed.

Donald Burford said the Ketchikan pulp mill has operated for 40 years with people harvesting oysters in front of the mill without, to his knowledge, a single death due to cancer.

Burford said the thought that mills will operate for a short time, lay waste to the land, and cause cancer deaths to be "improbable and frightening and I refuse to accept it."

Anthony Williams said, "If pulp mills were to shut down, what is the risk factor involved in that?" If the risk factor would put jobs in jeopardy, perhaps the water standard should be lowered even further, Williams said.

But the tide of the public hearing was overwhelmingly against the proposed standards, despite any risk to jobs.

Caryl Boehnert of Alaskans for Juneau, a mine watchdog organization, said "we should call the it the Department of Environmental Economics, not the Department of Environmental Conservation, then at least we would be saying it up front."

Boehnert, a private research scientist, said that in terms of economic impacts the state's proposed water-pollution policy discriminated against smaller industries such as fishing and tourism by lowering water standards in favor of larger industries such as hard rock mining, pulp and paper mills, and oil and gas operations.

"It's clearly an economic war when fishing is taking a third or fourth place," Boehnert said.

Kate Troll, executive director of the Southeast Alaska Seiners Association and a member of the habitat committee for United Fishermen of Alaska, said she has seen three family members succumb to cancer and though the proposed standards would cripple the reputation of Alaska's wild fish.

Troll said inferior standards would belie the message told with millions of dollars of state funds spent on marketing salmon.

"Stringent water-quality standards are in themselves an excellent marketing tool," she said.

Sandor said after the hearing, "I think you should know that the governor has assured the United Fishermen association and he has certainly given us direction. He said he did not want to see aquatic life changed or modified. And they are not being modified even by this proposal."

Sandor said DEC has a mandate to protect fisheries. "We devote a lot of time to that."

He said public concerns would be addressed and he downplayed the importance of emotional public testimony in DEC's adoption of its final standards.

"The purpose of the public comment is not to take a vote based on the number of people who are for or against the proposal," Sandor said. "The purpose of the public comment is to make absolutely certain that the comments and the suggestions are addressed and incorporated into the development of the regulations."

Other concerns addressed included the timing of the public comment process, which – though it has been extended six weeks to Sept. 30 – coincides with the commercial fishing season, making it difficult for fishermen to participate. Troll and others asked for the comment period to be extended another month to Nov. 1.

Their request has not been acted on.

A public hearing has been set for Sept. 24 in Haines and a teleconference for Sept. 25 for Juneau additional comments.

Misguided satellite

The European Retrievable Carrier (EURECA) satellite released by the shuttle Atlantis has been languishing in a low

Shuttle...

Continued from Page 1

up to 5,000 volts of electricity as it cuts across Earth's magnetic field at 17,500 mph.

A Cover-Up on Agent Orange?

Critics charge that the Centers for Disease Control sabotaged an investigation of the defoliant's effects on Vietnam veterans

The medical detectives at the Atlanta-based Centers for Disease Control have a well-earned reputation for relentlessly tracking down the causes of such mysterious ailments as Legionnaires' disease. But the agency's record is in danger of being blemished by a bitter controversy over Agent Orange, a defoliant containing dioxin, a suspected carcinogen.

Critics charge that the agency and one of its senior officials, Dr. Vernon Houk, helped scuttle a $63 million study that might have determined once and for all whether U.S. troops exposed to Agent Orange suffered serious damage to their health. Houk maintains he recommended that the study be canceled on strictly scientific grounds. Yet there is evidence that the CDC suppressed reports from the National Academy of Sciences that directly challenged its position, and spurned extensive help from the Pentagon, leading the White House to kill the study.

Agent Orange was widely used in Vietnam to strip the thick jungle canopy that helped conceal enemy forces; only later did scientists become aware of the potentially dangerous long-term effects of dioxin, which has produced cancers in animals. The defoliant has been suspect ever since unknown numbers of Vietnam veterans developed various cancers or fathered seriously handicapped children. Based on the inability to prove a conclusive link between those ailments and Agent Orange, the Reagan and Bush administrations refused to compensate veterans for all but a few of these health problems. But critics charge that no clear connections have been established because no serious large-scale study of exposed veterans has been done.

The most forceful complaints about the CDC have been leveled by former Chief of Naval Operations Elmo R. Zumwalt Jr. As the Navy's top commander in Vietnam, he ordered that Agent Orange be sprayed in the Mekong Delta region to destroy vegetation from which the Vietcong regularly launched ambushes against U.S. patrol boats. In 1988 Zumwalt's son Elmo III, a former lieutenant who had served in the "brown-water Navy," died from a rare lymphoma. Zumwalt believes his son's exposure to Agent Orange was responsible.

Last month Zumwalt told a House subcommittee that the CDC's work on Agent Orange had been "a fraud." He singled out Houk for having "made it his mission to manipulate and prevent the true facts from being determined." New York Congressman Ted Weiss, chairman of the panel, charged in an interview that the CDC appeared to have "rigged" its investigation to support its view that a large study of exposed veterans was not feasible.

Congress authorized the CDC study in 1982 after receiving thousands of complaints from Vietnam vets about Agent Orange. Houk, director of the agency's Center for Environmental Health and Injury Control, was placed in charge. At the White House, a science panel of the Agent Orange Working Group supervised the CDC's investigation. The Pentagon assigned its Environmental Support Group to provide the CDC with Agent Orange spraying records and those of the deployment of soldiers who may have been exposed.

But the study soon bogged down in a complex dispute over identifying which soldiers were likely to have been exposed to Agent Orange. The CDC considered a company of 200 men potentially exposed if it passed within 1.3 miles of a recently sprayed area. The Army had fairly detailed records on the daily positions of its companies during the fighting. There were gaps, but the Pentagon group repeatedly told the CDC that other documents, such as daily journals and situation reports, could be used to pinpoint which units had ventured into areas sprayed with the defoliant. Houk's team complained that the Pentagon data were too spotty to determine whether companies had been deployed in normal formations spread over 200 to 300 yards or dispersed over distances of up to 12 miles. It stubbornly refused to make use of the other records.

By late January 1986, Dr. Carl Keller, chairman of the White House science panel, and several other of its members concluded that Houk had already decided that the CDC study was not feasible and was trying to pin the blame on the Pentagon. To break the impasse, retired Army Major General John Murray was asked by Defense Secretary Caspar Weinberger to review the Pentagon records. After a four-month study, Murray thought the records were useful. But as a nonscientist he did not feel competent to rebut the objections raised by Houk and the White House scientists. He gave up, agreed that the information was inadequate and suggested cancellation of the project.

Unknown to Murray and the White House, the Institute of Medicine, an arm of the National Academy of Sciences, then turned in a contracted consultants' report to the CDC on the Agent Orange study. It concluded that the Pentagon group was fully capable of "determining locations and filling gaps" in the troop movements and criticized the CDC's study for excluding many of the veterans most likely to have been exposed. The CDC never

Veterans march in Washington to protest the poison used to protect them

Shortly before a tragedy, Admiral Zumwalt ordered spraying; his son died

The father claimed there had been a "mission" to conceal "the true facts."

turned the institute's report over to the White House.

Murray presented his conclusions at a White House meeting on May 27, 1986. The White House moved to kill the study unless other ways could be found to identify exposed soldiers. Much later, Murray learned of the institute's report and began to doubt his recommendation. "I may have been a babe in the woods," he said in an interview. "My feeling now is that this whole thing deserves another look."

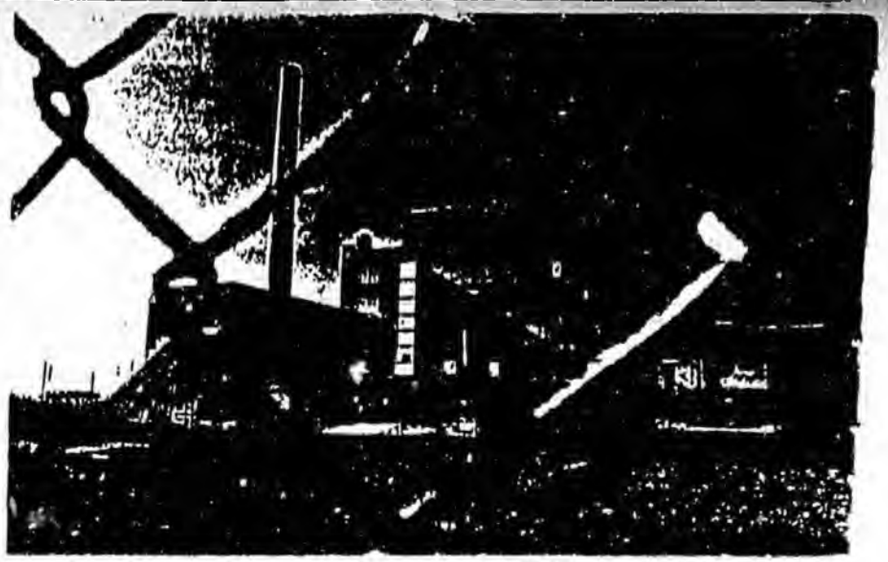
Instead of killing the project outright, the White House panel accepted a proposal by Houk to take blood tests of 646 Vietnam veterans, selected on the basis of their probable exposure, to see if they had elevated blood levels of dioxin. The tests showed that none had abnormal blood levels—not surprising, given that the exposure would have taken place 20 years earlier and that none of those tested had handled Agent Orange directly.

Though many scientists ridiculed the blood tests, Houk used them to contend again that the Pentagon records could not be used to pinpoint exposure to Agent Orange. He recommended canceling the study; the White House Science Panel agreed, and the Domestic Policy Council did so in September 1987. This was after $43 million had been spent.

Once again the White House had acted without having all the facts. The Institute of Medicine only weeks earlier had written a blistering review of the CDC's work. It urged that each of the agency's major conclusions be deleted because the evidence presented by the CDC did not support them. The White House never received this devastating report.

The CDC's Dr. Vernon Houk

Houk insists that his opposition to continuing the project was based solely on rigorous scientific principles. "If we could find a population of people who were exposed in sufficient numbers, we would have proceeded with our study," he says. "We just simply could not find them." Skeptics like Congressman Weiss suspect that the CDC did not want to antagonize the Reagan Administration, which was worried about the huge liability costs if Agent Orange was shown to cause the veterans' ailments. Whatever the reasons for its failure, the decision not to complete the study leaves open a vexing problem: whether Agent Orange will exact a toll on Vietnam vets and their descendants for generations to come. *—By Ed Magnuson. Reported by Jay Peterzell/Washington*



A reactor at the suspected plant, shut down since the 1960s

There Was Death in the Milk

Maybe in fish too, according to a new study of long-ago radiat releases from the nuclear reservation in Hanford, Wash.

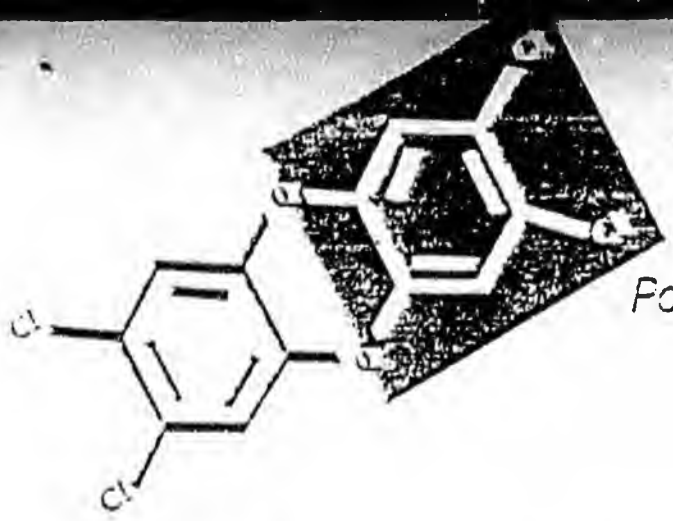
Growing up in Moses Lake, Wash., Vicki Skipper suffered stomach cramps that continued even after her family moved to Connecticut in 1962, when she was eight. Later, she reports, "I got swollen glands unde my arms, and I had my thyroid removed, and they never figured out what it was. I always thought it was from the plant, but I could never prove it." A federally sponsored panel of scientists and medical experts last week, however, indicated that her suspicions—and those of thousands of others who, from the late 1940s until well into the 1960s, lived in eight Washington and two northern Oregon counties near the Hanford, Wash., nuclear reservation—are far from groundless.

The panel found that between 1944, when it opened, and 1947, the Hanford weapons plant poured so much radioactive iodine into the air that 1,200 children living nearby were exposed to cumulative doses ranging from 15 to 650 rads (one rad is roughly equal to the radiation from a dozen chest X rays). About 13,500 people, or 5% of the area's total population, may have taken in doses of 33 rads or more—about twice the three-year dosage the Nuclear Regulatory Commission considers safe for workers exposed to radiation as an occupational hazard.

The iodine was released as a gas when fuel rods were chemically dissolved in acid as the last step in producing plutonium, the explosive material in some nuclear weapons. It got into humans mostly because they drank milk from cows that had grazed on grass contaminated by airborne iodine. In human bodies the iodine tended to concentrate in the thyroid in amounts that would have been enough to cause at least some cases of

Though the releases were heavi tween 1944 and 1947—one reason th el picked that period for study—th not stop then. "Regulatory standard not developed until the 1950s," the noted, and not until 1973 did the of radiation in the atmosphere decr the point that it could no longer be measured. The panel, funded by t partment of Energy, also studied of radioactive substances from nu actors into the Columbia River b 1964 and 1966, when some of the discharges occurred. River wat pumped through the reactors to co Radioactivity—in lower doses than borne iodine—entered the bodies ple who swam in the river or lived o near it or ate fish caught in it.

The Hanford plant and react shut down in the late 1960s; milk, vegetables from the area by now ou radiation-free. But that is no cons those exposed to dangerous radiat er. A study of health effects of the by the Centers for Disease Contr be complete until 1993. If the gove unwilling to offer compensation who lived near the plant and fell ill time of heavy discharges, or to the if they have died, Washington Sen. Adams promises to introduce leg compel it to do so. Meanwhile, Vi has perhaps the last word: "Whe byl hit, I remember thinking tha sure had a lot of nerve talking ab when we've been doing the same people." *—By George J. Church. Ellis E. Conklin/Seattle and Rosan Washington*



Dioxin's Other Face

Portrait of an "environmental hormone"

By KAREN F. SCHMIDT

When a villain starts looking like a friend, it's time to look again. Take TCDD, the most notorious and potent member of the dioxin family. Once demonized as "the most toxic synthetic chemical known to man" because of its exquisitely lethal effect on guinea pigs, TCDD now appears "no more risky than spending a week sunbathing," as a recent New York Times article put it.

In 1982, scares over TCDD forced several thousand residents of Times Beach, Mo., to permanently flee their tainted community. But "given what we now know about this chemical's toxicity and its effects on human health, it looks as though the Times Beach evacuation was unnecessary," Vernon N. Houk — the scientist at the Centers for Disease Control who originally spearheaded the evacuation — acknowledged, according to the Times article last August.

Most dioxin researchers now suspect that only very high doses of TCDD — as occur accidentally or in certain occupational settings — may increase the risk of cancer in humans. But that redefinition does not necessarily imply that the chemical is harmless at lower doses.

Indeed, this near-ubiquitous contaminant — a by-product of the paper, wood and herbicide industries and of the incineration of organic solvents — is gaining a new and nasty reputation among toxicologists: as an "environmental hormone" that subtly disrupts normal physiology in ways not completely understood. More potent than some of the body's natural chemical messengers, TCDD suppresses the immune system of mice at least 100 times more effectively than corticosterone, a hormone known for that effect, dioxin researchers say. In fact, increasing evidence suggests that TCDD's ability to mess with the immune system — not its carcinogenicity — may represent its greatest threat to public health.

All this flip-flopping on the chemical's toxicity may puzzle the public, but it has proved no less confusing to dioxin researchers. TCDD's toxic effects result from a perplexing web of interactions. Unlike most toxicants, dioxin causes an array of biological responses that vary widely according to tissue. For example, TCDD may goad one cell type to reproduce wildly and cause another to deviate from its normal path toward specialization.

Different animal species also vary in their responsiveness to dioxin. It takes several thousand times more TCDD to kill a hamster than it does to kill a guinea pig. Yet the hardy hamster is quite susceptible to TCDD's triggering of increased cellular levels of a P450 enzyme — a protein catalyst that plays a role in detoxifying certain chemicals within the body and rendering others more toxic.

Unfortunately, epidemiologic studies have done little to resolve toxicologists' muddy understanding of dioxin's human hazards. For instance, such studies rarely turn up consistent adverse effects among humans exposed to dioxin — with the exception of chloracne, the disfiguring skin eruptions associated with acute TCDD exposures.

Consider studies of U.S. troops potentially exposed to Agent Orange, a TCDD-tainted herbicide, while serving in Vietnam. An Air Force study of veterans who had participated in the Ranch Hand defoliation program found indications that these men faced an increased — though statistically insignificant — risk of skin, genito-urinary and otopharyngeal cancers and a tendency to develop underactive thyroids and diabetes (SN: 3/3/84, p.132). Another study found an increased incidence of high blood pressure, benign fatty tumors, sensitivity to light, and depression among these veterans and miscarriages among their wives (SN: 11/19/88, p.325). A third study found that Vietnam veterans suffer higher-than-normal rates of non-Hodgkins lymphoma, a deadly cancer of the lymph nodes, but it failed to tie the disease to Agent Orange exposure (SN: 4/14/90, p.236).

"If you think of TCDD as a hormone, it makes it easier to understand these very big differences," asserts Linda S. Birnbaum, director of environmental toxicology at the Environmental Protection Agency's Health Effects Research Laboratory in Research Triangle Park, N.C. A single hormone can induce an array of effects in different tissues and species, she explains.

The environmental hormone theory also helps explain why dioxin appears to induce a variety of cancers rather than a single hallmark type — such as the rare form of cancer, called mesothelioma, that signals asbestos exposure. Unlike most carcinogens, TCDD does not directly damage DNA in a target organ, notes George W. Lucier of the National Institute of Environmental Health Sciences in Research Triangle Park. However, he explains, dioxin clearly enhances abnormal cell growth and appears to cause cancer by amplifying the diverse activities of other carcinogens.

Two recent epidemiologic studies support the human carcinogenicity of TCDD, at least at fairly high doses. In one, researchers at the National Institute for Occupational Safety and Health examined health records for workers exposed to TCDD at a dozen chemical plants. Overall, the 5,172 workers appeared 15 percent more likely to die from cancer than the general population, Marilyn A. Fingerhut and her co-workers reported in the Jan. 24, 1991 NEW ENGLAND JOURNAL OF MEDICINE. However, records on the 1,520 workers whose exposures began at least 20 years ago — when plant dioxin levels were typically much higher than today — showed nine times the normal rate for one particular cancer, soft-tissue sarcoma.

A similar study of 1,583 pesticide-plant workers in Germany showed that, compared with the general population, TCDD-exposed workers experienced a 24 percent higher rate of death from all cancers. Among workers with more than 20 years' exposure, the cancer death rate increased to 87 percent above normal, according to Alfred Manz and his co-workers at the Center for Chemical Workers' Health in Hamburg. However, they reported in the Oct. 19, 1991 LANCET, the increases were not linked to any one

particular type of cancer.

On the basis of these and other studies, Birnbaum says, "I really feel that high-dose exposure to dioxin has the potential to cause cancer." However, she adds, "I'm very concerned that much lower exposure to dioxin may result in adverse health effects that are very subtle and difficult to detect."

In an effort to update federal regulatory guidelines for human exposures to dioxin – now considered a "probable human carcinogen" – EPA has begun reassessing the scientific data on dioxin. In its draft version of this document, due in June, EPA will focus much greater attention on toxicological data revealing TCDD's reproductive, developmental and immunotoxic effects. This document will also establish TCDD as the first pollutant to be regulated on the basis of toxicity observed at the cellular level.

Now that most dioxin researchers believe a single fundamental mechanism underlies all of TCDD's effects (see box, p. 26), toxicologists such as Lucier can construct a unifying mathematical model to describe how dioxin triggers biological effects in cells and organisms. Others, including Birnbaum and Nancy I. Kerkvliet of Oregon State University in Corvallis, will help flesh out the model by collecting specific data on the dose-response relationships between TCDD and its array of biological effects.

"Dioxin is no more and no less potent than it ever was," Kerkvliet says. "But understanding the mechanism can now help us better estimate the human risk."

So far, studies in mice suggest that dioxin's immunotoxic punch occurs in extremely low doses and may well be more important than cancer in determining dioxin's primary health risk, adds Birnbaum. At least in animals, some suppression of immunity consistently occurs at TCDD doses lower than or equal to those required for triggering increased production of a P450 enzyme – previously considered a liver cell's most sensitive response. In fact, Birnbaum's preliminary unpolished data suggest that immunotoxicity in mice could be occurring at TCDD doses one of that needed to boost levels of this enzyme, she says.

Even though scientists continue to debate whether an excess of this P450 enzyme causes any adverse health effects, "few people will contend that suppression of the immune system is not an adverse health effect," she observes.

To study TCDD's immunotoxicity, researchers generally use mice, whose immune systems model those of humans. In one typical test, EPA toxicologists exposed mice to TCDD, then injected them with a harmless, antibody-stimulating agent – red blood cells from sheep. An animal's ability to produce antibodies serves as one useful measure of its immunological health. Compared with normal mice, the TCDD-treated animals produced fewer antibodies to the sheep blood cells, Birnbaum says.

EPA researchers have also measured how well TCDD-treated mice respond to viral injections, such as influenza. Mice pretreated with dioxin readily die after exposure to a quantity of virus that rarely kills healthy mice. Gary R. Burleson of EPA's Research Triangle Park facility and his co-workers reported in the November 1990 JOURNAL OF TOXICOLOGY AND ENVIRONMENTAL HEALTH. Birnbaum's team is now trying to determine the dose-response relationships of these immunosuppressive effects.

Because "there are so many ways to cause immune suppression," Birnbaum explains, scientists can only speculate as to how TCDD weakens immunity. Indeed, she notes, "there could be multiple mechanisms."

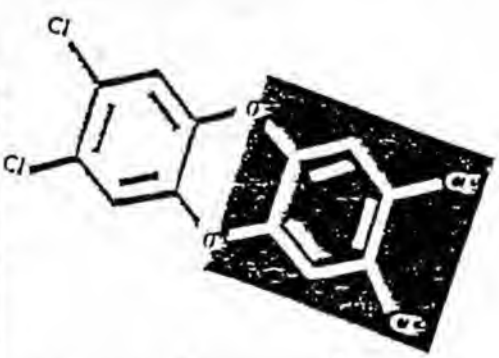
At a minimum, TCDD probably interferes with the normal influences of hormones on the immune system, Kerkvliet posits. She says that it appears TCDD can combine with a particular type of receptor protein inside a cell's fluid interior, and then inappropriately turn on specific genes. Some of the victimized cells may reside in glandular tissues, such as the thymus, where hormones influencing immunity are produced.

Dioxin also appears to act directly on the immune system, says Kerkvliet, who studies TCDD's effects on a group of white blood cells called T-lymphocytes. She and her co-workers were initially confounded when they observed that although TCDD boosts production of T-lymphocytes – which referee the total immune response – it still causes an overall decline in the mouse immune system's ability to fight foreign substances, be they viruses or pollutants.

"We think TCDD is turning on certain T-helper cells inappropriately, which then makes the overall immune response suppressed," Kerkvliet now says. This idea fits with a new hypothesis that not all of the specialized T-lymphocytes called T-helper cells "help" strengthen the immune response; some may actually inhibit it, she notes.

For the most part, Kerkvliet believes that dioxin initiates its direct immunotoxic effects by binding to the dioxin protein receptor – perhaps in the bone marrow, where white blood cells are produced – and by toying with the normal functioning of genes. Recently, her research group studied how TCDD affects a mouse's production of cytotoxic T-lymphocytes, which destroy cells infected with viral invaders.

The team compared responses in TCDD-treated mice with normal and defective dioxin receptors, and found significantly greater immune suppression in the mice with normal receptors. They also compared the responses of these mice to a variety of polychlorinated biphenyls (PCBs), chemical relatives of dioxin. Immunity suppression indeed correlated with each chemical's ability to bind to the protein receptor. Kerkvliet's group reported in the April 1990 FUNDAMENTAL AND APPLIED TOXICOLOGY. These findings suggest that dioxin's protein receptor plays an important role in its immunotoxicity, they say.



During the Vietnam war, the U.S. military dumped millions of gallons of TCDD-tainted Agent Orange over South Vietnam. Veterans who participated in this defoliation program, called Operation Ranch Hand, have experienced a variety of health problems that might be related to dioxin exposure.

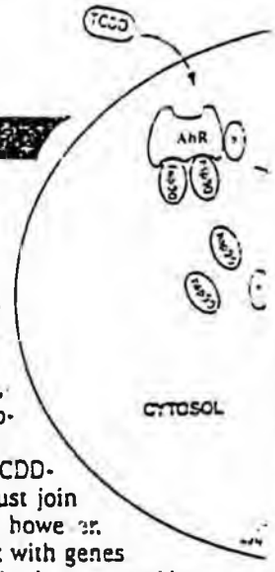
Given the complexity of the immune system, however, not all dioxin researchers are ready to settle on a single receptor-based mechanism to describe all of TCDD's immunosuppressive effects.

Michael P. Holsapple of the Medical College of Virginia/Virginia Commonwealth University in Richmond has also observed that "when we give dioxin to animals or white blood cells, we see problems with their immune function." However, he adds, "the immune system is probably just a microcosm of the whole complex story for dioxin." He suspects that TCDD may employ different routes of attack depending on the conditions of exposure, he says.

For instance, his team compared the effects of acute versus chronic TCDD exposures on the ability of mice to produce antibodies to sheep red blood cells. After a single acute dose, mice with normal dioxin receptors suffered greater immune suppression than mice who had defective receptors. However, when mice received this same amount of TCDD over a two-week period, both mouse strains showed similar immunosuppressive responses, he and his colleagues report in the January 1992 TOXICOLOGY AND PHARMACOLOGY. Holsapple now theorizes that TCDD's mechanisms may not always involve the receptors and may differ at high and low doses.

Throughout the developed world, humans already experience chronic low-dose exposures to dioxins, primarily through their diet (SN: 7/13/85, p.26). Holsapple and his co-workers suspect that people "exposed to low doses over an extended period of time (i.e. months to years) may be at increased risk to immunotoxic effects by these chemicals through additional and presently unidentified mechanisms."

One such mechanism can be inferred from developing research in the field of endocrinology, Holsapple says. Scientists had assumed that, much like dioxin, all steroid hormones act exclusively through an intracellular protein receptor that helps it target a particular gene (SN: 8/10/91, p.85). But Holsapple points to new evidence suggesting that some steroid hormones — including progesterone, estrogen and testosterone — can also bind to other receptors on the outside of a cell membrane, where they can regulate the flow of salts into and out of a cell. TCDD might also tinker with a cell's physiology through such a mechanism, he suggests.



Dioxin's Cellular Siege

Dioxin may cause everything from immune suppression and liver tumors to cleft palate in mice, but all of these adverse effects begin with the same initial cellular changes, most dioxin toxicologists now believe.

This "new" view — the impetus behind the Environmental Protection Agency's (EPA) current reassessment of dioxin's risks — actually traces back to 1976. That year scientists reported discovering that TCDD — the most toxic and best studied of the 75 dioxin species — binds with a receptor protein residing in the cells it invades. Only recently, however, did a group of 38 international dioxin experts unanimously conclude that *every one* of TCDD's myriad effects appears to begin with the compound's binding to this receptor — a mechanism resembling that of the body's own steroid hormones.

"Those biological responses [to TCDD] that have been examined in great detail have all been shown to involve this receptor," says EPA toxicologist Linda S. Birnbaum, one of the scientists who reached agreement at the dioxin conference held at Cold Spring Harbor Laboratory (N.Y.) in late 1990. She says EPA hopes to base a new assessment of human health risks from dioxin — and new regulations — on the recently recognized universality of this receptor in TCDD's effects.

In the 15 years since scientists first realized that dioxin binds to a receptor, called aryl hydrocarbon (Ah), they have developed a detailed picture of how TCDD acts on individual cells. For example, the Ah receptor actually comprises several proteins that cluster together in the liquid interior of most cells in the body. Once dioxin seeps into a cell and links up with these proteins, the TCDD-protein complex can enter the cell's nucleus and cause trouble by meddling with the on-off switches of genes.

Cells of some tissues, such as the liver, teem with Ah receptor proteins, while others may contain only a few. Why our cells should produce such receptors for dioxin remains a mystery.

Perhaps the body produces a hormone that normally operates through the Ah receptor, speculates Thomas A. Gasiewicz of the University of Rochester (N.Y.) School of Medicine. As scientists come to understand the similar and overlapping actions of our natural chemical messengers — hormones and neurotransmitters — with toxicants and drugs, traditional definitions are blurring, he says.

"Just because a compound binds to a receptor doesn't mean it's necessarily going to be toxic," Gasiewicz observes. Any natural hormone that binds to the Ah receptor probably plays a healthy role in regulating cell growth, he says. Even steroids — vitally important hormones that act through protein receptors — can turn "toxic" when their levels get out of whack, he adds. For instance, excess estrogen can lead to cancer.

Scientists have no clues as to the identity of the hormone that normally binds to the Ah receptor, but they assume it physically resembles TCDD, for which there's a perfect docking site on one protein subunit of the Ah receptor. Once TCDD enters the cell, it binds with the receptor and evicts other subunits, called heat shock protein 90.

The remaining TCDD-receptor complex must join yet another protein, however, before it can interact with genes in the cell's DNA, Gasiewicz reported in the March 19, 1991 BIOCHEMISTRY. This additional protein, called the Ah receptor transforming protein (Art), does not directly bind to TCDD, he found, but instead seems to enable the whole complex to hook up with DNA. Gasiewicz now theorizes that Art, which may vary slightly in structure according to the tissue, might steer the complex to act on certain genes.

To get at those genes, the TCDD-receptor complex must first enter the cell's nucleus. Although it's not clear just which events occur in the liquidy cytosol surrounding the nucleus, Oliver Hankinson of the University of California, Los Angeles, has found a protein that must join the complex before the ensemble can gain passage into the cell's center. This protein bears a basic helix-loop-helix structural motif common to DNA-binding proteins. Hankinson reported in the May 17, 1991 SCIENCE. In fact, he told SCIENCE NEWS, it may be the same Art protein that Gasiewicz discovered.

Although they are still identifying the receptor's protein players, Gasiewicz and Hankinson know that it takes at least two proteins and TCDD to create a

In mice, it takes far smaller quantities of TCDD to suppress immunity than it does to unleash most of TCDD's other toxic effects. And white blood cells in both mice and humans respond similarly to TCDD. But to date, there's little evidence to suggest that low-dose exposures to TCDD suppress immunity in humans. Birnbaum, Kerkvliet and Holsapple contend that studies of dioxin-exposed humans have asked the wrong questions.

"If I were to take mice and ask the same [research] questions that are routinely asked of the populations at Times Beach, or in the Ranch Hand study, I would come up with a very nebulous picture [of TCDD's immunotoxicity]," says Holsapple. "But when we ask different questions [in mice], we can certainly show very strong effects on the immune response."

Birnbaum is now calling for a study that will determine how well TCDD-exposed people mount an antibody response to a novel antigen. Perhaps a new flu vaccine – one that uses an influenza strain that hasn't previously infected humans – can serve the function of the sheep red blood cells given to laboratory mice, she says.

But Kerkvliet says EPA shouldn't hold its breath waiting for the definitive epidemiologic study. It would be next to impossible to prove beyond a doubt that dioxin causes immune suppression in humans, she asserts. Unlike sheltered laboratory mice, people come in contact with many immunity-altering forces – such as stress, drugs and disease. Regulators should therefore base their limits for safe exposures to dioxin on animal models and on our developing scientific understanding of TCDD's mechanisms of action, she says.

Kerkvliet suspects that most Americans – who harbor about 30 parts per trillion (ppt) of dioxins in their blood, including about 7 ppt of TCDD – fall below the range of dioxin exposures that can jeopardize immunity. However, she adds, populations that commonly receive higher doses, such as nursing infants (SN: 4/20/96, p.254), chemical workers and people who consume large quantities of fish, could conceivably experience compromised immunity.

"The fact that you can't clearly show the effects in humans in no way lessens the fact that dioxin is an extremely potent chemical in animals – potent in terms of immunotoxicity, potent in terms of promoting cancer," says Kerkvliet. "I simply don't believe that humans represent some unique species." □

Once TCDD (T) seeps into a cell, it binds to an aryl hydrocarbon receptor (AhR) and kicks off the heat-shock protein (hsp90) subunits. The complex then joins an Ah-receptor-transforming protein (Arnt) and passes into the nucleus, where the ensemble binds to DNA and switches a gene on or off. Unidentified "mystery proteins" (?) may also participate throughout this process. An activated gene triggers production of messenger RNA (mRNA), the instructions that a cell then uses to build a specific protein, such as a P450 enzyme.

complex that can turn on a gene. And once that complex binds to DNA, it can activate a gene and thereby cause the cell to produce excessive quantities of a certain protein. Theoretically, dioxin could also turn some genes off, which can also cause ill effects.

Unlike the steroid hormones, which degrade in a few hours, TCDD molecules require seven years to reduce their concentration by half. Because of TCDD's long half-life, it appears that the body cannot regulate this process and the gene's "switch can be turned on for inappropriately long periods of time," Gasiewicz points out. Thus, one TCDD molecule can continuously disrupt normal cell physiology.

In developing a model to explain dioxin's cellular actions, scientists have primarily studied how TCDD turns on a gene for a P450 enzyme. While this specific enzyme normally helps the body excrete toxic substances, it sometimes renders them more potent instead. Though scientists don't know if increased levels of P450 enzymes contribute to any of dioxin's toxic effects, they do know that the TCDD-receptor complex probably flips the P450 gene switch by a mechanism that applies to many other genes as well.

"We're beginning to know the beginning of the story, which is how the receptor activates genes," says Hankinson. "And to some degree we understand the end product [why animals get cancer and why they die]. The real black box is *which* genes are turned on and how they relate to the biological effects of dioxin."

Recently, William F. Greenlee and his colleagues at Purdue University in West Lafayette, Ind., found several new genes targeted by the TCDD-receptor complex. In the Oct. 18, 1991 SCIENCE, they describe identifying two dioxin-responsive genes in human skin cells. The first directs the production of plasminogen activator inhibitor-2, a protein that functions in embryonic development, wound healing, inflammation and cancer. The second gene contains the code enabling a cell to produce cytokine interleukin 1-beta, a protein involved in inflammation and immune responses.

These are the first genetic targets of dioxin to be discovered since the P450 gene, and Greenlee says "these [new] genes are likely to play an important role in the toxicity of TCDD." He says they could plausibly be involved in chloracne – the hallmark skin reaction that usually signals acute human exposure to dioxin. These findings lend credence to a unifying mechanism for all of dioxin's diverse effects, Greenlee says.

"If you look at the broad range of events, it all comes back to a very generic process," he says.

Making the leap from a generic cellular mechanism to guidelines for human exposure – as EPA proposes to do – could prove tricky, however. Some toxicologists argue that receptor involvement implies a certain rate-limiting event – perhaps a minimum number of TCDD molecules needed to bind – before a cell or animal responds with a measurable change in its physiology. This in turn suggests that a "threshold" concentration may exist, below which dioxin causes little or no harm (SN: 5/18/91, p.308).

However, scientists should not assume a safe threshold exists, argues George W. Lucier of the National Institute of Environmental Health Sciences in Research Triangle Park, N.C. To date, his research team has found no predictable, consistent pattern in the dose-response relationships for a number of dioxin's toxic effects – nor evidence of any thresholds.

"My data might not prove that a threshold doesn't exist," Lucier concludes, "but there's also no evidence to support that one does exist."

Still, which ever way the chips fall, Lucier says he's pleased that EPA is finally attempting to incorporate recent research findings into an updated view of dioxin's human toxicity.

"A lot of dollars are spent doing mechanistic research," he comments. "There are thousands of papers on dioxin. We ought to be able to use some of that information in the risk assessment process." – *K. Schmidt*

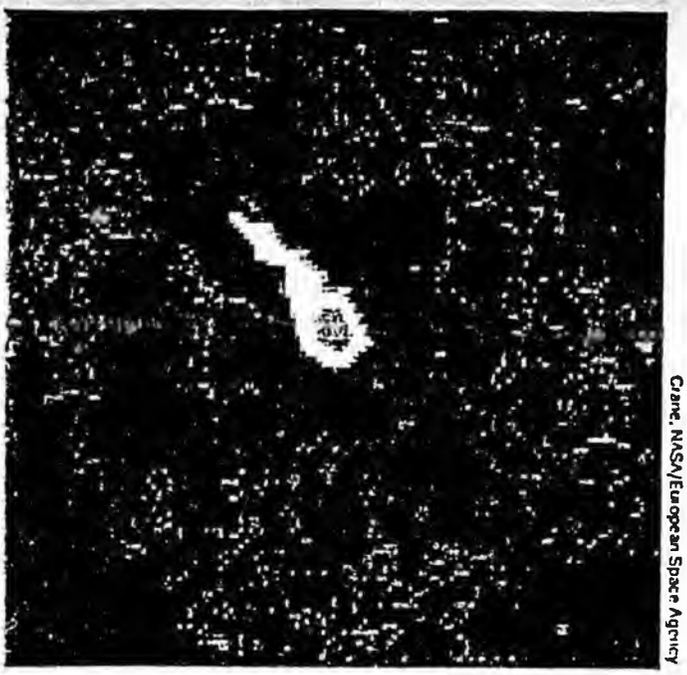
Hubble images reveal unusual galactic jet

Viewed from Earth in visible light, the elliptical galaxy NGC 3862 doesn't look like much. Indeed, its flat emission pattern, apparently devoid of sharp peaks and dips in intensity, once prompted researchers to describe this galaxy as "optically dull."

But orbiting 380 miles above Earth, the Hubble Space Telescope now reveals that the nucleus of NGC 3862 spews out a short jet of radiation, too short to have been detected with ground-based telescopes, in both visible light and the near ultraviolet. Moreover, this jet shines more brightly in the ultraviolet — at the shorter end of the electromagnetic spectrum — than at longer wavelengths, a feature diametrically opposite to the energy output of any other galactic jet yet observed.

"It appears that we are seeing a new type of phenomenon," says Philippe Crane of the European Southern Observatory (ESO) in Garching, Germany.

Researchers believe that a typical jet, possibly powered by a massive black hole or other potent energy source at the center of a galaxy, radiates because of the acceleration of electrons that circle strong galactic magnetic fields. This radiation, known as synchrotron radiation, has a higher intensity at redder, or longer, wavelengths. The well-studied jet in the galaxy M87, for example, fits this model perfectly, says Crane (SN: 1/25/92, p.52).



Ultraviolet image of the galaxy NGC 3862, viewed with Hubble's Faint Object Camera, shows jet (elongated white area) extending from the galaxy's core.

Crane, NASA/European Space Agency

Crane speculates that the unique radiation pattern from NGC 3862, a resident of the Abell cluster of galaxies, could represent a combination of two types of emissions: standard synchrotron radiation as well as radiation, primarily in the ultraviolet, from atoms that surround the jet and are heated by it. If this interpretation proves correct, it would mark the first time that astronomers have observed both types of radiation from a jet.

Crane notes, however, that recent observations with the ESO's New Technology Telescope in La Serena, Chile, found no evidence of atomic emissions. Alternatively, he adds, the jet's output may stem from galactic mechanisms not yet understood. — *R. Cowen*

Perinatal dioxin feminizes male rats

When delivered to pregnant rats, a very low dose of dioxin can not only demasculinize but also feminize the sexual development of male offspring, a trio of new studies shows. The lasting reproductive effects — both behavioral and physiological — occur at doses well below those causing visible toxicity.

Scientists at the University of Wisconsin-Madison had shown that overtly toxic doses of TCDD, the most potent dioxin, can reduce concentrations of androgens — the male sex hormones, such as testosterone — in the blood of adult animals. Because TCDD crosses the placenta, these researchers wondered if dioxin exposures before and immediately after birth might also alter androgen levels and the role of these hormones in a male animal's sexual development.

Thomas A. Mably and his co-workers provided such perinatal exposures with a single oral dose of TCDD to female rats on day 15 of their pregnancy — a time when organ formation in the fetal pups was nearly complete and the males were ready to produce androgens. Though the pups' TCDD exposure undoubtedly began *in utero*, notes Dick Peterson, who led the three Wisconsin studies, earlier data indicate a pregnant animal will eliminate most of the fat-seeking toxicant through breast milk. Peterson therefore believes nursing provided the bulk of the pups' dioxin.

In the May TOXICOLOGY AND APPLIED PHARMACOLOGY, his team reports finding that perinatal exposures to TCDD produced dose-dependent changes in androgens and their reproductive effects "into adulthood."

Compared to male pups whose mothers received no dioxin, TCDD-exposed pups developed smaller accessory sex organs (such as the ventral prostate), appeared to mature sexually more slowly, exhibited distinctly feminine-style regulation of one hormone related to testosterone production and expressed a greater willingness to assume a receptive-female posture when approached by a sexually stimulated male. Even the lowest dose of TCDD delivered — 0.064 microgram per kilogram of the mother's body weight, a level well below what the researchers had expected would produce any quantifiable effects — yielded consistent reductions in a male offspring's daily sperm production and sperm reserves.

Other recent studies suggest that TCDD may act as an "environmental hormone" (SN: 1/11/92, p.24). It now appears that the developing male reproductive system is more sensitive to the effects of this hormone-like toxicant than any other organ or organ system studied, the Wisconsin scientists write.

Though these changes did not affect the rats' fertility, Peterson notes, "that does not mean these findings do not have human health implications."

Male rats normally inseminate a female with up to 10 times as many sperm as are typically needed to ensure impregnation. Humans, by contrast, typically release only about as many sperm as would be required for fertilization. "As a result," Peterson and his coworkers write, human reductions in sperm production "similar in magnitude to that in rats would be expected to reduce fertility in man."

"Highly significant" is how Linda S. Birnbaum characterizes the findings. Director of environmental toxicology at EPA's health effects lab in Research Triangle Park, N.C., she was impressed by the subtle, permanent reproductive-system changes from very low-level TCDD exposures and by the "failure [of the team] to find a no-effects level."

"The real question is how general these effects are," Birnbaum says.

Her lab will repeat the studies with another strain of rats — and, eventually, other species. Unlike Peterson's group, EPA's experiments will also look at females, she said, "because there may be effects on them as well."

And if this effect holds in another species? "I would get very concerned [about the potential human-health implications]," Birnbaum says. — *J. Raloff*

World Watch
July/Aug '92

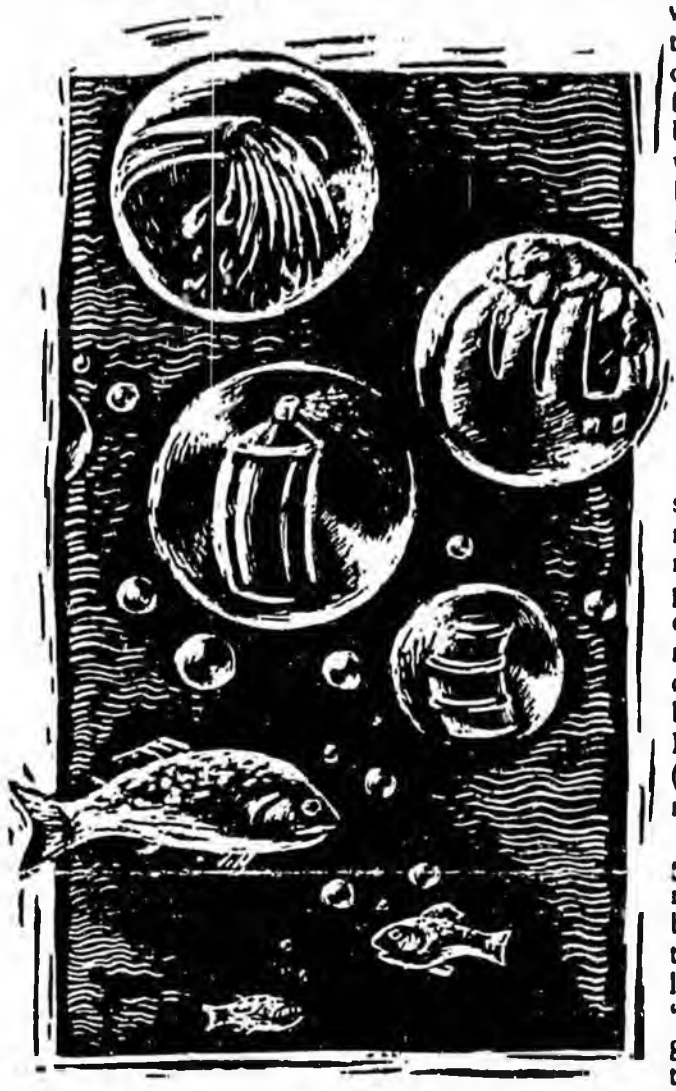
Chemical Reaction in the Animal Kingdom

BY ANN MISCH

Something strange is going on in the animal kingdom, especially among vertebrates living close to water. Scientists in the field have noticed immune suppression, abnormal behavior, wasting (a gradual shriveling and dying), and reproductive failure in beluga whales inhabiting Canada's St. Lawrence River, fish living in polluted urban bays, and numerous species of birds, fish, and mammals in and around the Great Lakes.

Viral epidemics have broken out four times in the past five years among striped and bottlenose dolphins—twice in the Mediterranean Sea, once off the Atlantic Coast of the United States, another time in the Gulf of Mexico—and twice in seals. Fish pathologists have also detected unusually high rates of liver tumors and other abnormalities, such as eroded fins, among fish drawn from the Chesapeake Bay, the Puget Sound, the Hudson and Buffalo rivers in New York, the Black River in Ohio, and coastal waters surrounding Los Angeles.

Just what is going on? Across this broad range of geography and malady



there is a common denominator: the presence of three families of industrial chemicals, both in the animals' habitats and in their tissues. What the field studies have found does not constitute a phenomenon quite like the DDT catastrophe of years past, when a single highly toxic chemical was found to be the cause of massive die-offs of birds. Here, the pattern is subtler and more complex—a spectrum of chemicals linked to a pattern of biological abnormalities. The discovery has come about as a result of growing sophistication in the methodologies available to scientists monitoring the effects of toxins on biological systems.

The new evidence suggests that low-level chemical exposure resulting in long-term accumulation in the body may lead to effects quite different from those dramatic collapses that have previously driven the formation of public policy on chemical effluents. In fact, some scientists now believe these newly revealed effects—such as breakdowns in the immune or reproductive systems and normal development running amok—may replace cancer and mortality as the most significant health threats posed by these chemicals. The implicated substances are organochlorines (dioxin, PCBs, the now-banned DDT, and pesticides such as dieldrin and mirex), aromatic hydrocarbons (including the carcinogen benzo(a)-pyrene, or BaP), and heavy metals (cadmium, lead, and mercury).

In the past, toxicologists often assessed the risk posed by chemicals by the incidence of mortality or cancer caused in laboratory animals. "These are relatively gross health indicators," though, says Katherine Davies, one of many scientists who have contributed to discussions on pollution and wildlife in the Great Lakes held by the International Joint Commission. Laboratory researchers are now uncovering an array of subtler, non-lethal "endpoints"—or measurable effects—that earlier studies had overlooked.

Many of these effects are unleashed at lower levels than those at which cancer appears. This has led some scientists to call for changes in state and federal standards of safe exposure, which are traditionally based on doses set low enough to avoid cancer. Theo Colburn, a toxicologist and senior fellow at the World Wildlife Fund in Washington, D.C., said in recent testimony before the Senate Committee on Governmental Affairs, "you can't find the science behind the regulatory decisions that are being made."

What researchers are especially alert for now are hidden effects of exposure to toxic compounds that persist in the environment for many years and accumulate in the fat of animals high up in the food chain. These effects may be found either in animals directly exposed or in their young, who in some cases inherit the burden of their parents' exposure.

Some synthetic chemicals and heavy metals now appear to disrupt vital physiological processes, such as the regulation of hormones, the functioning of the immune and nervous systems, growth, and reproduction. They might also be responsible for altered behavior, such as the indifference Forster's terns around Lake Michigan show toward their young. Normally, biologists expect to see adult terns lavish attention on their helpless, nest-bound offspring.

Dioxin, for instance, is known to toxicologists as an "environmental hormone" because it seems to offer itself as a hormone substitute. Depending on the situation, dioxin can either block or enhance the effects of the animal's own hormones.

Dioxin's effects can show up in offspring even when the parents exhibit no outward signs of exposure. For instance, exposing pregnant rats to dioxin lowers testosterone levels in the blood of their newborn rat pups, finds Professor Dick Peterson and coworkers at the University of Wisconsin's School of Pharmacy. As the male rats mature, their sexual development, which is normally propelled by testosterone surges, lags behind. ①

TRENDS • Contd.

②

Exposure to toxics may also impair an animal's ability to produce offspring. Pierre Beland, director of the St. Lawrence National Institute of Ecotoxicology, and Daniel Martineau, a pathologist at Cornell University's School of Veterinary Medicine, have observed reproductive complications and other health problems among an isolated population of beluga whales that inhabit a polluted stretch of Quebec's St. Lawrence River. They have found fewer juvenile belugas among this group than among beluga populations in the Arctic. Their analyses of tissue samples from dead whales have revealed high levels of mercury, lead, cadmium, PCBs, DDT, mirex, dioxin, and furans, among other toxics.

Beland and Martineau conclude that a "direct cause and effect relationship is likely to exist between the various toxic compounds present in tissues and the health and reproductive status of this population."

While absolute proof that chemicals *cause* disease will always elude field biologists, researchers nonetheless have two important tools to assist them in tracing connections between pollutants and disease. First are epidemiological studies drawing correlations between measured levels of chemicals and observed symptoms in wildlife, such as those carried out by Colburn, Beland, and Martineau. Second are more precise lab tests, such as those performed by Dick Peterson, that draw a clearer picture of the multiple effects of toxins within cells and among different organs and systems.

When associations between chemicals and diseases are established in field studies, and the toxicity of those chemicals can be recreated in the laboratory, further "proof" becomes moot. Daniel Martineau dryly comments that to actually *prove* that particular chemicals caused the problems he and others have observed in the beluga whales, "you'd have to have a perfectly clean St. Lawrence on one side and a polluted St. Lawrence on the other." The inherent uncertainty involved in tracing a single chemical to a particular symptom may itself be the best argument for taking correlations—which scientists now have in abundance—more seriously.

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IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF NEW YORK

Agent Orange
Vernon Houk
+
Dioxin

SHIRLEY IVY, Individually and as Representative of the Estate of DONALD IVY, *et al.*

Plaintiffs,

v.

DIAMOND SHAMROCK CHEMICALS COMPANY, *et al.*

Defendants.

CV-89-03361 (E.D.N.Y.) (JBW)

[B-89-00559-CA (E.D.TEX.)]

AFFIDAVIT OF CATE JENKINS, PH.D.

RECENT SCIENTIFIC EVIDENCE DEVELOPED AFTER 1984 SUPPORTING A CAUSAL RELATIONSHIP BETWEEN DIOXIN AND HUMAN HEALTH EFFECTS

V. CONCLUSION

420. A large volume of new research published since 1984 demonstrates a wide range of adverse health effects associated with dioxin. The populations where these effects are found include Vietnam veterans, residents living in Missouri where contaminated oil was used on roads, chlorophenol and phenoxyacetic acid chemical production workers in the U.S. and other countries, farmers using phenoxyacetic acid herbicides, and residents exposed to dioxin contamination in Seveso, Italy from an industrial explosion.

421. Many Vietnam veterans and other populations exposed to dioxin have experienced more than one of the adverse health effects associated with dioxin. Such a coincidence of injuries increases the probability that the common causal factor for the multiple injuries was dioxin rather than two or more coincidental factors. The range of human populations exposed to dioxin experiencing these heath effects (Vietnam veterans, farmers, forestry workers, residential populations in Missouri and Italy, and chemical production workers in the U.S. and other countries) establishes a firm basis for concluding that dioxin, and not some other unique factor related to service in Vietnam, was responsible for these health effects. Furthermore, many Vietnam veterans as well as other populations exposed to dioxin have experienced dose-related increased rates of these adverse health effects, providing strong epidemiologic evidence that the effects were caused by, and not merely associated with, dioxin. In all cases, animals have experienced these same health effects when dioxin is administered in a controlled laboratory setting, thus providing a plausible biological basis for the health effects observed in humans.

422. The effects demonstrated by these new studies to be significantly associated with dioxin exposures include elevated cancers of all sites combined (representing a general carcinogenic effect of dioxin), as well as cancers of specific sites, namely: soft tissue sarcomas; non-Hodgkin's lymphoma; Hodgkin's disease; leukemias, lymphomas, and other hematologic cancers; respiratory system cancer; skin cancer; testicular cancer; and cancers of the brain, stomach, colon, rectum, prostate, hepatobiliary tract, pancreas, and kidney. One adverse effect in addition to cancer significantly associated with dioxin is organic nerve damage, including peripheral as well as central nervous system damage, and the severe consequences of central nervous system damage, such as suicide and fatal accidents, depression, anxiety, and other neuropsychological problems. Other adverse effects significantly associated with dioxin include reproductive abnormalities; immunological abnormalities; dermatologic abnormalities; hepatotoxic effects; gastrointestinal ulcer; cardiovascular disorders; metabolic disorders such as porphyria cutanea tarda, thyroid dysfunction, diabetes, and altered lipid metabolism; and lung and thorax abnormalities.

Dioxin related ~~###~~ illnesses

423. On the basis of the evidence analyzed and summarized above, including epidemiologic evidence concerning the consequences of exposure to dioxin and phenoxyacetic acid herbicides, it is my opinion to a reasonable scientific certainty that the above mentioned adverse health effects and reproductive outcomes, and physical, social, and neuropsychiatric and neuropsychological consequences of these adverse health effects, were probably caused by the plaintiffs' exposures to Agent Orange while in service to our country in the Vietnam War.

The foregoing affidavit and appendices are a true and accurate statement of my scientific assessment in the above-captioned case to the best of my knowledge and belief.

SIGNED:

Cate Jenkins, Ph.D.

Signed and sworn before me by CATHERINE L. JENKINS this 3RD day of SEPTEMBER, 1991

Elizabeth H Smith
Notary Public, District of Columbia
My Commission Expires Sept. 14, 1995

My commission expires the _____ day of _____.

Elizabeth H. Smith
Notary Public, District of Columbia
My Commission Expires Sept. 14, 1995

SIGNED:

Notary Public

EXHIBIT I

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF NEW YORK

SHIRLEY IVY, Individually and as Representative of the Estate of DONALD IVY, et al.	[]	
Plaintiffs,	[]	CV-89-03361 (E.D.N.Y.) (JBW)
V.	[]	[B-89-00559-CA (E.D.TEX.)]
DIAMOND SHAMROCK CHEMICALS COMPANY, et al.	[]	
Defendants.	[]	

AFFIDAVIT OF ADMIRAL ELMO R. ZUMWALT, JR.

BEFORE ME, the undersigned authority, appeared Admiral Elmo R. Zumwalt, Jr., USN (Ret.), 1500 Wilson Blvd., Arlington, VA 22209, and after being duly sworn does testify and declare as follows:

1. From 1968 to 1970 I served as the Commander of U.S. Naval Forces, Vietnam. From 1970 to 1974 I served as the Chief of Naval Operations and a member of the Joint Chiefs of Staff.

2. On October 6, 1989 I was appointed Special Assistant to Secretary Derwinski of the Department of Veterans Affairs ("VA") to assist the Secretary in determining whether there is a significant ("as likely as not") statistical association between exposure to Agent Orange and any specific adverse health effect.

3. As Special Assistant, it was my duty, with the assistance of independent scientific experts, to do the following: 1) evaluate scientific studies regarding the health effects of Vietnam veterans exposed to Agent Orange, as well as numerous studies concerning the health hazards of civilian exposure to dioxin contaminants; 2) review and evaluate the protocol and standards employed in the major government sponsored studies, in order to assess their credibility, fairness and consistency with generally accepted scientific practices; and 3) review and evaluate the work of the Scientific Council of the Veterans' Advisory Committee on Environmental Hazards.

to harmful doses of Agent Orange.

30. As the Committee concluded, the blood serum analysis, used as proof that an exposure study could not be conducted, was based on erroneous assumptions and a flawed analysis. For example, CDC's conclusion that the half-life of dioxin in the human body is 7.1 years was reached in disregard of warnings from CDC's own scientists and the National Academy of Sciences Institute of Medicine ("IOM") peer review committee that there was not sufficient evidence to support the longer half-life. IOM informed CDC that, because of the incorrect assumptions about the half-life of dioxin, the conclusions of the blood study were not supportable. IOM also rejected CDC's conclusion about the inadequacy of military records as a basis for exposure estimates, independent of any blood serum analysis.

Vernon Houk

31. In his testimony, under questioning from the Subcommittee Chairman, Rep. Weiss, Dr. Vernon Houk admitted that the senior statistician on the Agent Orange project believed that the dioxin blood analysis was so flawed that it had "a substantial likelihood that there would be essentially no correlation" between the exposure scores and the blood levels. Dr. Houk disagreed with this officially expressed opinion of the project's senior statistician and supported the validity of CDC's blood serum analysis. 1989 Agent Orange Hearing at 67 (statement of Vernon N. Houk, M.D., Director, Center for Environmental Health and Injury Control, Centers for Disease Control, U.S. Department of Health and Human Services).

32. In the course of my duties as Special Assistant to the Secretary of Veterans Affairs I have specifically reviewed the work of Dr. Vernon Houk in connection with Agent Orange studies, both in his capacity as a member of the AOWG and as a CDC official. It is my conclusion that Dr. Vernon Houk has made it his mission to manipulate scientific data and procedures so as to prevent the true facts about dioxin from being determined. Continuing to pursue this effort, Dr. Houk has been recently quoted in Time magazine, Aug. 26, 1991, The New York Times, Aug. 15, 1991, St. Louis, Washington, and other newspapers and media outlets, in an apparent public relations campaign, falsely claiming that previous assessments of the harmful effects of dioxin have been overestimated. These articles cite no credible basis for Dr. Houk's opinion. I consider this media campaign further evidence of Dr. Houk's attempts to cover up emerging evidence strongly confirming the harmful effects of dioxin.

33. Dr. Houk's politically motivated efforts to cover up the true effects of dioxin, and manipulate public perception, coincide with the similar, economically motivated, efforts of chemical companies that produce dioxin. They are, in my judgment, responsible for letters and articles that have been published in the media discounting the effects of dioxin on human

health. These chemical companies that place profits above other concerns, were very cunning in working out the 1984 Agent Orange settlement deal before all the scientific information -- such as that now presented in Dr. Jenkins' affidavit in this case or the disclosures recounted here about the way in which the supposedly objective government studies were manipulated -- became available. It is apparent that these same companies are now attempting to support the validity of that settlement, at the very time it is under review in this case, by means of a public relations campaign centered around the statements of Dr. Vernon Houk, whose work on the CDC Agent Orange study has been thoroughly discredited.

34. Upon discovering the irregularities in CDC procedures, Dr. Philip Landrigan, who was the former Director of the Environmental Hazards Branch at the CDC, stated: "Suspicion abounds that CDC did not look deeply enough into the existing records and did not exercise sufficient ingenuity in seeking to identify a potentially heavily exposed subset of veterans. . . . Further, I would argue that CDC should itself be raising the question." 1989 Agent Orange Hearing at 229 (statement of Philip J. Landrigan, M.D.).

35. In 1986, the Subcommittee on Oversight and Investigations of the Committee on Energy and Commerce documented how political officials of the Office of Management and Budget ("OMB"), who were untutored in science, interfered with and second-guessed the professional judgments of agency scientists and multidisciplinary panels of outside peer review experts to effectively alter or forestall CDC research on the effects of Agent Orange, primarily on the grounds that "enough" dioxin research had already been done. OMB Review of CDC Research: Impact of the Paperwork Reduction Act: A report Prepared for the Subcommittee on Oversight and Investigations of the Committee on Energy and Commerce, 99th Cong., 2nd Sess. (1986).

36. The Committee on Government Operations' Agent Orange hearings revealed additional examples of political interference in the CDC's Agent Orange projects by members of the White House Agent Orange Working Group. Evidence of political interference in the design and implementation of the CDC study and drafting of the results of the CDC study by Administration officials rather than CDC scientists, further destroys the credibility of the CDC exposure study efforts. The Committee concluded from this evidence, as do I, that the CDC study of the effects of dioxin on Vietnam veterans was controlled and obstructed by the White House, primarily through its AOWG and the OMB so as to prevent any useful findings by the CDC concerning the effects of Agent Orange. This obstruction was done pursuant to a strategy for denying liability in cases of toxic contamination.

I. NEW EVIDENCE SHOWING A SIGNIFICANT ASSOCIATION BETWEEN AGENT ORANGE EXPOSURE AND CERTAIN HEALTH EFFECTS

4. There is mounting evidence of a causal connection between certain illnesses and exposure to dioxins. After reviewing the scientific literature, I have concluded that the following illnesses are significantly associated with exposure to Agent Orange: non-Hodgkin's lymphoma, chloracne and other skin disorders, lip cancer, bone cancer, soft tissue sarcoma, birth defects, skin cancer, lung cancer, porphyria cutanea tarda and other liver disorders, Hodgkin's disease, hematopoietic diseases, multiple myeloma, neurological defects, auto-immune diseases and disorders, liver cancer, nasal/pharyngeal/esophageal cancers, leukemia, malignant melanoma, kidney cancer, testicular cancer, pancreatic cancer, stomach cancer, prostate cancer, colon cancer, brain cancer, psychosocial effects, gastrointestinal diseases, diabetes, and cardiovascular abnormalities.

5. In addition to my report on the scientific studies showing an association between health effects and Agent Orange exposure, I have reviewed the affidavit of Dr. Cate Jenkins submitted in this action. Dr. Jenkins' affidavit compiles a growing number of studies showing a link between dioxin exposure and serious health effects. This extensive list of positive studies, all published in 1984 or later, further supports my conclusions stated above.

II. FAULTY CONCLUSIONS, FLAWED METHODOLOGY AND NOTICEABLE BIAS OF THE VA ADVISORY COMMITTEE ON ENVIRONMENTAL HAZARDS

6. In 1984, Congress passed the Veterans' Dioxin and Radiation Exposure Compensation Standards Act, Pub. L. No. 98-542, 98 Stat. 2727 (1984) (the "Dioxin Standards Act") to provide disability compensation to Vietnam veterans exposed to herbicides containing dioxin. Congress authorized the VA to conduct rulemaking to determine which diseases were entitled to compensation as a result of a service-related exposure to Agent Orange. The Dioxin Standards Act required the VA to appoint a Veterans' Advisory Committee on Environmental Hazards (the "Advisory Committee") to review the scientific literature on dioxin and submit periodic recommendations and evaluations to the Administrator of the VA. The Advisory Committee is composed of experts in dioxin and epidemiology, as well as interested members of the public. The responsibility of the experts is to evaluate the scientific evidence pursuant to regulations promulgated by the VA and thereafter to submit recommendations and evaluations to the Administrator of the VA (subsequently the Secretary of Veterans Affairs) on whether "sound scientific or medical evidence" indicated a connection between exposure to [illegible] the manifestation of various diseases. por-fu-rea