SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986

SECTION 1. The people of California find that hazardous chemicals pose a serious potential threat to their health and well-being, that state government agencies have failed to provide them with adequate protection, and that these failures have been serious enough to lead to investigations by federal agencies of the administration of California's toxic protection programs. The people therefore declare their rights:

(a) To protect themselves and the water they drink against chemicals that cause cancer, birth defects, or other reproductive harm.

(b) To be informed about exposures to chemicals that cause cancer, birth defects, or other reproductive harm.

(c) To secure strict enforcement of the laws controlling hazardous chemicals and deter actions that threaten public health and safety.

(d) To shift the cost of hazardous waste cleanups more onto offenders and less onto law-abiding taxpayers.

The people hereby enact the provisions of this initiative in furtherance of these rights.

SECTION 2. Chapter 6.6 (commencing with Section 25249.5) is added to Division 20 of the Health and Safety Code, to read:

CHAPTER 6.6.

SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986

25249.5. Prohibition On Contaminating Drinking Water With Chemicals Known to Cause Cancer or Reproductive Toxicity. No person in the course of doing business shall knowingly discharge or release a chemical known to the state to cause cancer or reproductive toxicity into water or onto or into land wh re such chemical passes or probably will pass into any source of drinking w ter, notwithstanding any other provision or authorization of law except as provided in Section 25249.9.

25249.6. Required Warning Before Exposure To Chemicals Known to Cause Cancer Or Reproductive Toxicity. No person in the course of doing business shall knowingly and intentionally expose any individual to a chemical known to the state to cause cancer or reproductive toxicity without first giving clear and

reasonable warning to such individual, except as provided in Se tion 25249.10.

25249.7. Enforcement.

(a) Any person violating or threatening to violate Section 25249.5 or Section 25249.6 may be enjoined in any court of competent jurisdiction.

(b) Any person who has violated Section 25249.5 or Section 25249.6 shall be liable for a civil penalty not to exceed $2500 per day for each such violation in addition to any other penalty established by law. Such civil penalty may be assessed and recovered in a civil action brought in any court of competent jurisdiction.

(c) Actions pursuant to this section may be brought by the Attorney General in the name of the people of the State of California or by any district attorney or by any city attorney of a city having a population in excess of 750,000 or with the consent of the district attorney by a city prosecutor in any city or city and county having a full-time city prosecutor, or as provided in subdivision (d).

(d) Actions pursuant to this section may be brought by any person in the public interest if (1) the action is commenced more than sixty days after the person has given notice of the violation which is the subject f the action to the Attorney General and the district attorney and any city attorney in whose jurisdiction the violation is alleged to occur and to the alleg d violator, and (2) neither the Attorney General nor any district attorney nor any city attorney or prosecuter has commenced and is diligently prosecuting an action against such violation.

25249.8 List Of Chemicals Known to Cause Cancer Or Reproductive Toxicity.

(a) On or before March 1, 1987, the Governor shall cause to be published a list of those chemicals known to the state to cause cancer or reproductiv toxicity within the meaning of this chapter, and he shall cause such list to be revised and republished in light of additional knowledge at least once per year thereafter. Such list shall include at a minimum those substances identified by reference in Labor Code Section 6382(b)(1) and those substances identified additionally by reference in Labor Code Section 6382(d).

(b) A chemical is known to the state to cause cancer or reproductive toxicity within the meaning of this chapter if in the opinion of the state's qualified experts it has been clearly shown through scientifically valid testing according to generally accepted principles to cause cancer or reproductive toxicity, or if a body considered to be authoritative by such experts has formally identified it as causing cancer or reproductive toxicity, or if an agency of the state or federal government has formally required it to be labeled or identified as causing cancer or reproductive toxicity.

(c) On or before January 1, 1989, and at least once per year thereafter, the Governor shall cause to be published a separate list of those ch micals that at th time f publication ar required by state r federal law to have been tested for potential to cause cancer or reprodu tiv toxicity but that the state's qualified experts have not found to have been adequately tested as required.

(d) The Governor shall identify and consult with the state's qualified experts as necessary to carry out his duties under this section.

(e) In carrying out the duties of the Governor under this section, the Governor and his designates shall not be considered to be adopting or amending a regulation within the meaning of the Administrative Procedure Act as defined in Government Code Section 11370.

25249.9 Exemptions from Discharge Prohibition.

(a) Section 25249.5 shall not apply to any discharge or release that takes place less than twenty months subsequent to the listing of the chemical in question on the list required to be published under subdivision (a) of Section 25249.8.

(b) Section 25249.5 shall not apply to any discharge or release that meets both of the following criteria:

(1) The discharge or release will not cause any significant am unt f the discharged or released chemical to enter any source of drinking water.

(2) The discharge or release is in conformity with all other laws and with every applicable regulation, permit, requirement, and order.

In any action brought to enforce Section 25249.5, the burden of sh wing that a discharge or release meets the criteria of this subdivision shall be on the defendant.

25249.10 Exemptions from Warning Requirement.

Section 25249.6 shall not apply to any of the following:

(a) An exposure for which federal law governs warning in a manner that preempts state authority.

(b) An exposure that takes place less than twelve months subsequent to the listing of the chemical in question on the list required to be published under subdivision (a) of Section 25249.8.

(c) An exposure for which the person responsible can show that th exposure poses no significant risk assuming lifetime exposure at the level in

question f r substances known to the state to cause can er, and that the exposure will have n observable ffect assuming exposur at ne thousand (1000) tim s the lev l in questi n for substanc s known to th state to cause reproductive toxicity, based on vidence and standards f comparable scientific validity to the evidence and standards which form the scientific basis for the listing of such chemical pursuant to subdivision (a) of Secti n 25249.8. In any action brought to enforce Section 25249.6, the burden of showing that an exposure meets the criteria of this subdivision shall b on the defendant.

25249.11 Definitions.

For purposes of this chapter:

(a) "Person" means an individual, trust, firm, joint stock company, corporation, company, partnership, and association.

(b) "Person in the course of doing business" does not include any person employing fewer than ten employees in his business; any city, county, or district or any department or agency thereof or the state or any department or agency thereof or the federal government or any department or ag noy th reof; or any entity in its operation of a public water system as defined in Section 4010.1.

(c) "Significant amount" means any detectable amount except an am unt which would meet the exemption test in subdivision (c) of Section 25249.10 if an individual were exposed to such an amount in drinking water.

(d) "Source of drinking water" means either a present source f drinking water or water which is identified or designated in a water quality control plan adopted by a regional board as being suitable for domestic or municipal uses.

(e) "Threaten to violate" means to create a condition in which ther is a substantial probability that a violation will occur.

(f) "Warning" within the meaning of Section 25249.6 need not b provided separately to each exposed individual and may be provided by general methods such as labels on consumer products, inclusion of notices in mailings to water customers, posting of notices, placing notices in public news media, and the like, provided that the warning accomplished is clear and reasonable. In order to minimize the burden on retail sellers of consumer products including foods, regulations implementing Section 25249.6 shall to the extent practicabl place the obligation to provide any warning materials such as labels on th producer or packager rather than on the retail seller, except where the retail seller itself is responsible for introducing a chemical known to the state to cause cancer or reproductive toxicity into the consumer product in question.

25249.12 Implementation. The Governor shall designate a lead agency and such oth r agencies as may be required to implement the provisi ns of this chapter including this section. Each agency s designated may ad pt and modify regulations, standards, and permits as necessary to conform with and implement the provisions of this chapter and to further its purposes.
25249.13 Preservation Of Existing Rights, Obligations, and Penalties. Nothing in this chapter shall alter or diminish any legal obligation otherwise required in common law or by statute or regulation, and nothing in this chapter shall create or enlarge any defense in any action to enforc such legal obligation. Penalties and sanctions imposed under this chapter shall b in addition to any penalties or sanctions otherwise prescribed by law.

SECTION 3. Subdivision (d) of Section 25189.5 of the Health and Safety Code is amended to read:

(d) The court shall also impose upon a person convicted of violating subdivision (b) or (c) a fine of not less than five thousand dollars ($5,000) or more than ~~fifty~~ one hundred thousand dollars ~~($50,000)~~ ($100,000) for each day of violation except as further provided in this subdivision. If the act which violated subdivision (b) or (c) caused great bodily injury or caused a substantial probability that death could result, the person convicted of violating subdivision (b) or (c) may be punished by imprisonment in the state prison for up to 36 months, in addition to the term specified in subdivision (b) or (c), and may be fined up to two hundred fifty thousand dollars ($250,000) for each day of violation.

SECTION 4. Section 25180.7 is hereby added to the Health and Saf ty Code as follows:

(a) Within the meaning of this section, a "designated government employee" is any person defined as a "designated employee" by Government Code Section 82019, as amended.

(b) Any designated government employee who obtains information in th course of his official duties revealing the illegal discharge or threatened illegal discharge of a hazardous waste within the geographical area of his jurisdiction and who knows that such discharge or threatened discharge is likely to cause substantial injury to the public health or safety must, within seventy-two hours, disclose such information to the local Board of Supervisors and to the local health officer. No disclosure of information is required under this subdivision when otherwise prohibited by law, or when law enforcement personnel have determined that such disclosure would adversely affect an ongoing criminal investigation, or when the information is already general public knowledge within the locality affected by the discharge or threatened discharge.

(c) Any designated government employee who knowingly and intentionally fails to disclose information required to be disclosed under subdivision (b) shall, upon conviction, be punished by imprisonment in the county jail for not more than one year or by imprisonment in state prison for not more than three years. The court may also impose upon the person a fine of not less than five thousand dollars ($5000) or more than twenty-five thousand dollars ($25,000). The felony conviction for violation of this section shall require forfeiture of government employment within thirty days of conviction.

(d) Any local health officer who receives information pursuant to subdivision (b) shall take appropriate action to notify local news media and shall make such information available to the public without delay.

SECTION 6. Section 25192 of the Health and Safety Code is amended to read:

25192. (a) All civil and criminal penalties collected pursuant to this chapter or Chapter 6.6 (commencing with Section 25249.5) shall be apportioned in the following manner:

(1) Fifty percent shall be deposited in the ~~Hazardous Waste Control Account~~ Hazardous Substance Account in the General Fund.

(2) Twenty-five percent shall be paid to the office of the city attorney, city prosecutor, district attorney, or Attorney General, whichever office brought the action, or in the case of an action brought by a person under subdivision (d) of Section 25249.7 to such person.

(3) Twenty-five percent shall be paid to the department and used to fund the activity of the local health officers officer to enforce the provisions of this chapter pursuant to Section 25180. If investigation by the local police department or sheriff's office or California Highway Patrol led to the bringing of the action, the local health officer shall pay a total of forty percent of his portion under this subdivision to said investigating agency or agencies to be used for the same purpose. If more than one agency is eligible for payment under this provision, division of payment among the eligible agencies shall be in the discretion of the local health officer.

(b) If a reward is paid to a person pursuant to Section 25191.7, the amount of the reward shall be deducted from the amount of the civil penalty before the amount is apportioned pursuant to subdivision (a).

(c) Any amounts deposited in the Hazardous Substance Account pursuant to this section shall be included in the computation of the state account rebate specified in Section 25347.2.

SECTION 6. If any provision of this initiative r the application thereof is held invalid, that invalidity shall not affect other provisions r applications of the initiative which can be given effect without the invalid provision or application, and to this end the provisions of this initiative are severable.

SECTION 7. To further its purposes this initiative may be amended by statute, passed in each house by a two-thirds vote.

SECTION 8. This initiative shall take effect on January 1, 1987.

1 l bottle 35gm (25.9 cm^3), 1000 cm^3 volume = 0.50 → 33ppb in liquid

Bag bottle: 25 gm (18.5 cm^3); 250 ml volume:

$$\therefore \beta = \frac{V_B}{V_p K^*} = \frac{250\ cm^3}{(18.5\ cm^3)(90.1)} = 0.15$$

1 gallon bottle 80gm (59.2 cm^3); 3785 cm^3 volume

$$\beta = \frac{3785}{(59.2)90.1} = 0.71$$

5 gallon bottle 500gm (370 cm^3) 18,930 cm^3

$$\beta = \frac{18930}{(370)(90.1)} = 0.56$$

Realistically $\beta = 1.0$ is a maximum.

$$\frac{C_f}{C_0} = \frac{1}{1+\beta} \quad \therefore \quad \frac{C_f}{1ppm} = \frac{1}{1+0.15}$$

C_f : 0.98 ppm (in liquid : 2.0ppb)

$$\frac{C_f}{C_0} = \frac{1}{1+\beta} \quad \therefore \quad \frac{C_f}{1ppm} = \frac{1}{1+1}$$

C_f = 0.50ppm (in liquid : 50 ppb)

40 mil slab 0.5 ppb

$= -8556/T\ ^\circ K$

$D = 3.66\ e$

$\sqrt{Dt/L^2}$

1 ppm $= 0.08\%$ 100 ppb $0.5^\circ\omega$

1 ppm $\Rightarrow$ 0.9975 ppm

D @ 40°C $= 1.2 \times 10^{-11}$ $\left(1.2\times10^{-11} / (2.54\times10^{-2})^2\right)^{1/2} = 1.36\times10^{-4}\sqrt{t}$

assume 20 mil bottle

$t_{1/2} = 0.43 = 1.36\times10^{-4}\sqrt{t}$

$\left(\frac{0.43}{1.36\times10^{-4}}\right)^2 = t$ sec

1.0×10^7 sec $= t$

OXY

Occidental Chemical Corporation

MEMO

PVC Resins/PVC Fabricated Products

cc ZDL
AK Energy

To G. P. LINDABERY **Date** NOVEMBER 2, 1987

From [redacted] CARROLL, JR.

Subject PROPOSITION 65

COPIES: H. GIOVANNELLI
D. GOODMAN
R. LARUE
T. J. REGUEIRO
F. A. SACKS

This is a summary of where we are and what we know about this regulation and our position.

The Proposition states that no manufacturer shall cause the citizenry of California to be exposed to a compound known to the State of California to be a carcinogen or reproductive toxin without adequate warning. It adds that if the exposure is "insignificant" (and specifies nondetectability as significance) or the risk of cancer from a detectable amount of material is "insignificant" (with no further explanation), then no warning is necessary.

In a draft interpretation of the Act from the State Department of Health there is an explicit daily intake of VCM cited for VCM: 0.03 micrograms/day. This would translate to 0.015 micrograms per liter of water. This level is apparently based on the F&DA proposal of February 1986, and actually constitutes one in ten million rather than one in a million. It also defines detectability at 0.5 ppb.

There are some ramifications for various products:

Potable water: Since the detectability limit is defined to be 0.5 ppb, this is the allowable maximum. Remember that NSF limits in pipe are predicated on acceptable water concentration of 2 ppb, presumably also on the basis of detection limits. This indicates that water piping may be at risk, and standard revision from NSF may have to come.

Food: Food grade PVC having less than 10 ppb in the bottle wall releases no detectable VCM to the product (per F&DA). Even if it released all of its VCM it would yield concentrations about at the detection limit. Our use of 5 ppb places us in good shape. The actual amount calculated to be released to the product (conservatively, by F&DA) is about 0.05 ppb. Once again, our lower limit would, given these assumptions, take us below the level expected to be adopted by California, regardless of detectability.

Cosmetics: Material packaged in general purpose compound presents a different problem. It may be worth attempting to analyze whether any monomer actually migrates. In addition to "nondetectability", however, the Act permits a risk assessment based upon the average use of a product by a consumer. If we were to use the F&DA document as an example we can calculate some possible exposures for various materials.

If we assume that the level of residual monomer in the bottle is 1 ppm, (not a worst case) the bottle contains 0.25 liters and weighs 25 gm, we calculate that the material would contain about 50 ppb VCM. If about 0.005 liters of product (shampoo, baby oil., etc.) is used daily, and all the monomer is absorbed dermally (a real worst case), this constitutes a daily exposure of about 0.3 micrograms daily, which is ten times the allowed exposure.

As I read this material, if a PVC package or pipe or blood bag releases no detectable VCM into its contents, then we are in compliance. The state of the art of detectability advances, however, and we can expect that the bar will be raised over time.

We have a number of options open to us. First, and most obvious is to do nothing and wait for the dust to settle. Our customers and potential customers appear to be uneasy with this strategy, and the very least we need to do is aggressively educate them about the Act and compliance.

Second, we can take action. It might be worthwhile to consider selling food grade material for any cosmetic to reduce the possibility of exposure from amazingly low to nondetectable. Another approach would be to adopt a lower level of VCM for general purpose which would be used for non-food human contact. If we were to adopt 100 ppb as the limit for compound, we might reasonably be able to demonstrate compliance. It is important to note, however, that this will require proof, and will not be as clean a call as "not detectable in the product". This will require analysis of materials packaged in PVC having such levels of VCM, or adaptation of the diffusion models proposed by Ethyl and BFGoodrich in the 70's. It will also require the courts or the State to buy into it.

Third, we could take heroic measures. If we were to decide that we would reduce the monomer level in our compound to "nondetectable" we would add another margin of safety for compliance, and prepare ourselves for the advances in analytical chemistry. We might also be able to score some marketing points, but they would be at the expense of slightly decreased production (assumes use of suspension resin). There would also be no going back. I think this is extreme, considering people are exposed to what constitutes zero risk. It would be a placebo, nothing more.

I think it would be prudent to decide on a strategy and prepare to implement it.

W. F. CARROLL, JR.

Occid ntal Ch mical Corporation

MEMO

PVC Resins/PVC Fabricated Products

To R. D. LUSS Date NOVEMBER 3, 1987

From W. F. CARROLL, JR.

Subj ct CALIFORNIA PROPOSITION 65

COPIES D. Goodman
G. P. Lindabery
H. Giovanelli
F. A. Sacks
A. H. Knouft

As we discussed, I have some concerns about the effect of Prop 65 on our pipe business. Currently, standards are maintained such that water contained in vinyl pipe has less than 2 ppb VCM. Proposition 65 specifies that no significant exposure to a carcinogen is permissable without adequate warning, and significant exposure is defined two ways. First, if no carcinogen is detected, no warning is necessary (No act, no foul). Second, if no significant risk of cancer results from exposure to a detectable amount of carcinogen, no warning is necessary (No harm, no foul). Unfortunately, neither detection limits nor significance tests are specified by the Act.

In draft documents prepared by the California Department of Health, the State appears ready to set these limits: 0.5 ppb detectability for VCM or one in ten million lifetime risk (0.03 micrograms VCM per day). Water ingestion would be set at two liters per day, and so the "no harm, no foul" concentration would be 0.015 ppb VCM in water, well below the detection limit. A detection limit of 0.5 ppb suggests that pipe contain no more than about 1 ppm VCM, but testing would still be necessary to show nonmigration.

My question is this: Could a bounty hunter expect to recover from the manufacturer of pipe already in place for failure to warn under the new Act? Some pipe in the ground today might be capable of emitting a detectable (but realistically, negligible) amount of VCM. Warning guidelines already suggested include the use of radio and newspaper ads to alert citizens to the presence of carcinogens. Additionally, would each piece of pipe and each fitting be considered a separate "violation" which draws a fine of $2500 per day?

I believe we could cope with prospective pipe by further removing monomer. My concern is for systems in place.

W. F. CARROLL, JR.

1) Bob
2) File

Sally - Send Copy to B. Carroll

HEALTH AND WELFARE AGENCY
SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986
(PROPOSITION 65)

NOTICE TO INTERESTED PARTIES

At its meeting on December 11, 1987, the Safe Drinking Water and Toxic Enforcement Act of 1986 Scientific Advisory Panel recommended that the State develop a priority list of approximately 50 chemicals for which risk assessments are to be reviewed and/or prepared. This recommendation was made by the Panel along with its statement identifying compliance with federal and State regulation of foods, cosmetics, drugs and medical devices as posing no significant risk, until risk assessments for the priority chemicals have been determined.

On March 16, 1988, the Health and Welfare Agency requested the Department of Health Services to provide risk assessments on the following chemicals:

1. By January 1, 1989:

   Aflatoxins
   Urethane (ethyl carbamate)

2. By July 1, 1989:

   DBCP
   Diethylhexylphthalate
   1,4-Dioxane
   Formaldehyde (gas)
   Lead acetate
   Nitrilotriacetic acid
   Polybrominated biphenyls (PBBs)
   Sodium saccharin

In addition, the Agency requested review of existing risk assessments by federal (generally EPA's Carcinogen Assessment Group) or State agencies (the California Department of Health Services for the California Air Resources Board) by the following dates:

1. By July 1, 1988:

   Asbestos (inhalation: ARB/DHS; ingestion: EPA)
   Benzene (EPA CAG; ARB/DHS)
   Cadmium (ARB/DHS; EPA CAG) (by specific compound)
   Carbon tetrachloride (ARB/DHS; EPA CAG)
   Chromium (hexavalent compounds) (ARB/DHS; EPA CAG)
   1,2-Dichloroethane (Ethylene dichloride) (ARB/DHS; EPA CAG)
   Ethylene dibromide (ARB/DHS; EPA CAG)
   Ethylene oxide (ARB/DHS; EPA CAG)
   Tetrachlorobenzo-para-dioxin (TCDD) (ARB/DHS; EPA CAG)

2. By October 1, 1988:

   Acrylonitrile (EPA CAG)
   Benzidine (EPA CAG)
   Benzo[a]pyrene (EPA CAG)

2. By October 1, 1988 (Cont.)

Bis(chloromethyl)ether (EPA CAG)
Chloroform (EPA CAG)
Coke oven emissions (EPA CAG)
DDT (EPA CAG)
3-3' Dichlorobenzidine (EPA CAG)
Epichlorohydrin (EPA CAG)
Hexachlorobenzene (EPA CAG)
Hexachlorocyclohexane (technical grade) (EPA CAG)
Nickel refinery dust (EPA CAG)
Nickel subsulfide (EPA CAG)
N-nitrosodi-n-butylamine (EPA CAG)
N-nitrosodiethylamine (EPA CAG)
N-nitrosodimethylamine (EPA CAG)
N-nitro-diphenylamine (EPA CAG)
N-nitroso-N-ethylurea (EPA CAG)
N-nitroso-N-methylurea (EPA CAG)
Polychlorinated biphenyls (PCBs) (EPA CAG)
Toxaphene (EPA CAG)
2,4,6-Trichlorophenol (EPA CAG)
Vinyl chloride (EPA CAG)

3. By January 1, 1989:

Acetaldehyde (EPA CAG)
Acrylonitrile (EPA CAG)
Arsenic (inorganic arsenic compounds) (EPA CAG) (by specific compound)
Beryllium (EPA CAG) (by specific compound)
Bis(2-chloroethyl)ether (EPA CAG)
1,3-Butadiene (EPA CAG)
Dichloromethane (Methylene chloride) (EPA CAG)
Hexachlorobenzodioxin (EPA CAG)
Tetrachloroethylene (Perchloroethylene) (EPA CAG)
Trichloroethylene (EPA CAG)

Based upon these assessments, levels of daily exposure for lifetime to each chemical, which is equivalent to one excess case of cancer per 100,000 people (Title 22, California Code of Regulations, Section 12703(b)), will be submitted to the Scientific Advisory Panel for review and comment, as described in 22 CCR, Section 12705(c), prior to promulgation in 12705(b) in 22 CCR. If more restrictive than levels allowed under federal or State regulation of foods, cosmetics, drugs, and medical devices, the level in 12705(b) would supersede other regulatory levels for that chemical in those products for purposes of the Act.

The Agency has requested the staff of the Department of Health Services to coordinate its activities on chemicals of concern to the agricultural community with staff of the Department of Food and Agriculture.

Comments on chemical-specific risk assessments should be directed to:

California Department of Health Services
Toxic Chemicals Assessment Section
714 P Street, Room 442
Sacramento, California 95814

GEORGE DEUKMEJIAN, *Governor*

STATE OF CALIFORNIA

HEALTH and WELFARE AGENCY
OFFICE OF THE SECRETARY
1600 NINTH STREET, ROOM 450
Sacramento, California 95814
(916) 445-6951

Dear Interested Party:

Please note that you can keep informed about the Safe Drinking Water and Toxic Enforcement Act of 1986 ("Proposition 65") by subscribing to two publications.

Notices of public interest, agenda of meetings, draft regulations, and updates of the list of chemicals known to the State to cause cancer or reproductive toxicity will be published in the California Regulatory Notice Register. It is published weekly and available from the Office of Administrative Law, 555 Capitol Mall, Suite 1290, Sacramento, California 95814. The annual subscription rate is $50. Please make checks payable to the State of California.

Regulations pertaining to the Act as well as the list of chemicals known to the State to cause cancer or reproductive toxicity are published in Division 2 of Title 22 beginning with Section 12000 of the California Code of Regulations, and also published in Title 26, which contains other regulations on toxic substances. Prices are $10 for Title 22, Division 2 (California residents add 6% sales tax), and $30 annually for updates (no tax). Title 26 is $100 (plus tax) for the basic title and $150 annually for updates. These are available through the Department of General Services, Office of Procurement, Publications Section, P. O. Box 1015, North Highlands, CA 95660, (916) 973-3700.

These publications must be ordered from the offices indicated above. They are not available through the Health and Welfare Agency.

Sincerely,

STEVEN A. BOOK, Ph.D.
Science Advisor to the Secretary

STATE OF CALIFORNIA
HEALTH AND WELFARE AGENCY
SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986

CHEMICALS KNOWN TO THE STATE TO CAUSE CANCER OR REPRODUCTIVE TOXICITY

The Safe Drinking Water and Toxic Enforcement Act of 1986 requires that the Governor revise and republish at least once per year the list of chemicals known to the State to cause cancer or reproductive toxicity. The identification number indicated in the following list is the Chemical Abstracts Service (CAS) Registry Number. No CAS number is given when several substances are presented as a single listing. The date refers to the initial appearance of the chemical on the list.

CHEMICALS KNOWN TO THE STATE TO CAUSE CANCER

Chemical	CAS Number	Date
Acetaldehyde	75070	April 1, 1988
2-Acetylaminofluorene	53963	July 1, 1987
Acrylonitrile	107131	July 1, 1987
Adriamycin	23214928	July 1, 1987
AF-2;[2-(2-furyl)-3-(5-nitro-2-furyl)]acrylamide	3688537	July 1, 1987
Aflatoxins	---	January 1, 1988
ortho-Aminoazotoluene	97563	July 1, 1987
4-Aminobiphenyl (4-aminodiphenyl)	92671	February 27, 1987
2 Amino-5-(5-nitro-2-furyl)-1,3,4-thiadiazole	712685	July 1, 1987
Amitrole	61825	July 1, 1987
ortho-Anisidine and ortho-Anisidine hydrochloride	90040	July 1, 1987
Analgesic mixtures containing phenacetin	---	February 27, 1987
Aramite	140578	July 1, 1987
Arsenic (inorganic arsenic compounds)	---	February 27, 1987
Asbestos	1332214	February 27, 1987
Auramine	492808	July 1, 1987
Azaserine	115026	July 1, 1987
Azathioprine	446866	February 27, 1987
Benz[a]anthracene	56553	July 1, 1987
Benzene	71432	February 27, 1987
Benzidine [and its salts]	92875	February 27, 1987
Benzo[b]fluoranthene	205992	July 1, 1987
Benzo[j]fluoranthene	205823	July 1, 1987
Benzo[k]fluoranthene	207089	July 1, 1987
Benzo[a]pyrene	50328	July 1, 1987
Benzotrichloride	98077	July 1, 1987
Benzyl violet 4B	1694093	July 1, 1987
Beryllium and beryllium compounds	---	October 1, 1987
Bis(2-chloroethyl)ether	111444	April 1, 1988
N,N-Bis(2-chloroethyl)-2-naphthylamine (Chlornapazine)	494031	February 27, 1987
Bischloroethyl nitrosourea (BCNU)	154938	July 1, 1987
Bis(chloromethyl)ether	542881	February 27, 1987
1,3-Butadiene	106990	April 1, 1988
1,4-Butanediol dimethanesufonate (Myleran)	55981	February 27, 1987
beta-Butyrolactone	3068880	July 1, 1987

Cadmium and cadmium compounds	---	October 1, 1987
Carbon tetrachloride	56235	October 1, 1987
Certain combined chemotherapy for lymphomas	---	February 27, 1987
Chlorambucil	305033	February 27, 1987
Chlordecone (Kepone)	143500	January 1, 1988
1-(2-Chloroethyl)-3-cyclohexyl-1-nitrosourea (CCNU)	13010474	January 1, 1988
Chloroform	67663	October 1, 1987
Chloromethyl methyl ether (technical grade)	107302	February 27, 1987
4-Chloro-ortho-phenylenediamine	95830	January 1, 1988
Chromium (hexavalent compounds)	---	February 27, 1987
Coke oven emissions	---	February 27, 1987
Conjugated estrogens	---	February 27, 1987
para-Cresidine	120718	January 1, 1988
Cupferron	135206	January 1, 1988
Cycasin	14901087	January 1, 1988
Cyclophosphamide	50180	February 27, 1987
Dacarbazine	4342034	January 1, 1988
Daunomycin	20830813	January 1, 1988
DDT (1,1,1-Trichloro-2,2-bis(p-chlorophenyl)ethane)	50293	October 1, 1987
Degraded Carrageenan (not food grade carrageenan)	---	January 1, 1988
2,4-Diaminoanisole sulfate	39156417	January 1, 1988
4,4'-Diaminodiphenyl ether	101804	January 1, 1988
2,4'Diaminotoluene	95807	January 1, 1988
Dibenz[a,h]acridine	226368	January 1, 1988
Dibenz[a,j]acridine	224420	January 1, 1988
Dibenz[a,h]anthracene	53703	January 1, 1988
7H-Dibenzo[c,g]carbazole	194592	January 1, 1988
Dibenzo[a,e]pyrene	192654	January 1, 1988
Dibenzo[a,h]pyrene	189640	January 1, 1988
Dibenzo[a,i]pyrene	189559	January 1, 1988
Dibenzo[a,l]pyrene	191300	January 1, 1988
1,2-Dibromo-3-chloropropane (DBCP)	96128	July 1, 1987
3-3'-Dichlorobenzidine	91941	October 1, 1987
3,3'-Dichloro-4,4'-diaminodiphenyl ether	28434868	January 1, 1988
Dichloromethane (Methylene chloride)	75092	April 1, 1988
Diepoxybutane	1464535	January 1, 1988
Di(2-ethylhexyl)phthalate	117817	January 1, 1988
1,2-Diethylhydrazine	1615801	January 1, 1988
Diethyl sulfate	64675	January 1, 1988
Diethylstilbestrol	56531	February 27, 1987
Dihydrosafrole	94586	January 1, 1988
3-3'-Dimethoxybenzidine (ortho-Dianiasidine)	119904	January 1, 1988
4-Dimethylaminoazobenzene	60117	January 1, 1988
trans-2-[(Dimethylamino)methylimino]-5-[2-5-nitro-2-furyl)vinyl]-1,3,4-oxadiazole	55738540	January 1, 1988
3,3'Dimethylbenzidine (ortho-Tolidine)	119937	January 1, 1988
Dimethylcarbamoyl chloride	79447	January 1, 1988
1,2 Dimethylhydrazine	540738	January 1, 1988
Dimethyl sulfate	77781	January 1, 1988
1,4-Dioxane	123911	January 1, 1988
Diphenylhydrazine	122667	April 1, 1988
Direct Black 38 (technical grade)	1937377	January 1, 1988
Direct Blue 6 (technical grade)	2602462	January 1, 1988

Epichlorohydrin	106898	October 1, 1987
Estradiol 17 B	50282	January 1, 1988
Estrone	53167	January 1, 1988
Ethinylestradiol	57636	January 1, 1988
Ethylene dibromide	106934	July 1, 1987
1,2-Dichloroethane (Ethylene dichloride)	107062	October 1, 1987
Ethyleneimine	151564	January 1, 1988
Ethylene oxide	75218	July 1, 1987
Ethylene thiourea	96457	January 1, 1988
Ethyl methanesulfonate	62500	January 1, 1988
Formaldehyde (gas)	50000	January 1, 1988
Formylhydrazino-4-(5-nitro-2-furyl)thiazole	3570750	January 1, 1988
Glycialdehyde	765344	January 1, 1988
Gyromitrin (acetaldehyde methylformylhydrazone)	16568028	January 1, 1988
Hexachlorobenzene	118741	October 1, 1987
Hexachlorocyclohexane (technical grade)	---	October 1, 1987
Hexachlorodibenzodioxin	34465468	April 1, 1988
Hexamethylphosphoramide	680319	January 1, 1988
Hydrazine and hydrazine sulfate	302012	January 1, 1988
Hydrazobenzene	122667	January 1, 1988
Indeno [1,2,3-cd]pyrene	193395	January 1, 1988
Iron dextran complex	9004664	January 1, 1988
Lasiocarpine	303344	April 1, 1988
Lead acetate	301042	January 1, 1988
Lead phosphate	7446277	April 1, 1988
Melphalan	148823	February 27, 1987
Merphalan	531760	April 1, 1988
Mestranol	72333	April 1, 1988
Methoxsalen with ultraviolet A therapy (PUVA)	298817	February 27, 1987
5-Methylchrysene	3697243	April 1, 1988
2-Methylaziridine (propyleneimine)	75558	January 1, 1988
Methylazoxymethanol	14901087	April 1, 1988
Methylazoxymethanol acetate	592621	April 1, 1988
4,4'-Methylene bis(2-methylaniline)	838880	April 1, 1988
4,4'Methylene bis(2-chloroaniline)	101144	July 1, 1987
4,4'Methylenedianiline and its dihydrochloride	101779	January 1, 1988
Methyl iodide	74884	April 1, 1988
Methyl methanesulfonate	66273	April 1, 1988
2-Methyl-1-nitroanthraquinone (of uncertain purity)	129157	April 1, 1988
N-Methyl-N'-Nitro-N-nitrosoguanidine	70257	April 1, 1988
Metronidazole	443481	January 1, 1988
Michler's ketone	90948	January 1, 1988
Mirex	2385855	January 1, 1988
Mitomycin C	50077	April 1, 1988
Monocrotaline	315220	April 1, 1988
5-(Morpholinomethyl)-3-[(5-nitro-furfurylidene)-amino]-2-oxalolidinone	139913	April 1, 1988
Mustard Gas	505602	February 27, 1987

Nafenopin	3771195	April 1, 1988
2-Naphthylamine	91598	February 27, 1987
Nickel refinery dust from the pyrometallurgical process	---	October 1, 1987
Nickel carbonyl	13463393	October 1, 1987
Nickel subsulfide	12035722	October 1, 1987
Niridazole	61574	April 1, 1988
Nitrilotriacetic acid	139139	January 1, 1988
4-Nitrobiphenyl	92933	April 1, 1988
5-Nitroacenaphthene	602879	April 1, 1988
Nitrofen (technical grade)	1836755	January 1, 1988
1-[(5-Nitrofurfurylidene)-amino]-2-imidazolidinone	555840	April 1, 1988
N-[4-(5-Nitro-2-furyl)-2-thiazolyl]acetamide	531828	April 1, 1988
Nitrogen mustard	51752	January 1, 1988
Nitrogen mustard hydrochloride	55867	April 1, 1988
Nitrogen mustard N-oxide and its hydrochloride	302705	April 1, 1988
2-Nitropropane	108032	January 1, 1988
N-Nitrosodi-n-butylamine	924163	October 1, 1987
N-Nitrosodiethanolamine	1116547	January 1, 1988
N-nitrosodiethylamine	55185	October 1, 1987
N-nitrosodimethylamine	62759	October 1, 1987
p-Nitrosodiphenylamine	156105	January 1, 1988
N-Nitrosodi-n-propylamine	621647	January 1, 1988
N-nitroso-diphenylamine	86306	April 1, 1988
N-nitroso-N-ethylurea	759739	October 1, 1987
N-nitroso-N-methylurea	684935	October 1, 1987
N-Nitroso-N-methylurethane	615532	April 1, 1988
N-Nitrosomethylvinylamine	4549400	January 1, 1988
N-Nitrosomorpholine	59892	January 1, 1988
N-Nitrosonornicotine	16543558	January 1, 1988
N-Nitrosopiperidine	100754	January 1, 1988
N-Nitrosopyrrolidine	930552	October 1, 1987
N-Nitrososarcosine	13256229	January 1, 1988
Orange Oil SS	2646175	April 1, 1988
Oxymetholone	434071	January 1, 1988
Panfuran S	---	January 1, 1988
Phenazopyridine and its hydrochloride	136403	January 1, 1988
Phenoxybenzamine and its hydrochloride	59861	April 1, 1988
Phenytoin and sodium salt of phenytoin	57410	January 1, 1988
Polybrominated biphenyls	---	January 1, 1988
Polychlorinated biphenyls (containing 60 or more percent chlorine by molecular weight)	---	January 1, 1988
Ponceau MX	3761533	April 1, 1988
Ponceau 3R	3564098	April 1, 1988
Procarbazine and its hydrochloride	366701	January 1, 1988
Progesterone	57830	January 1, 1988
1,3-Propane sultone	1120714	January 1, 1988
beta-Propiolactone	57578	January 1, 1988
Propylthiouracil	51525	January 1, 1988

Sodium saccharin	128449	January 1, 1988
Safrole	94597	January 1, 1988
Soots, tars, and lubricant base oils and derived products, specifically vacuum distillates, acid treated oils, aromatic oils, mildly solvent-refined oils, mildly hydrotreated oils, and used engine oils; and mineral oils, when used in occupations such as mulespinning, metal machining, and jute processing.	---	February 27, 1987
Sterigmatocystin	10048132	April 1, 1988
Streptozotocin	18883664	January 1, 1988
Sulfallate	95067	January 1, 1988
Testosterone and its esters	58220	April 1, 1988
2,3,7,8-Tetrachlorodibenzo-para-dioxin (TCDD)	1746016	January 1, 1988
Tetrachloroethylene (Perchloroethylene)	127184	April 1, 1988
Thioacetamide	62555	January 1, 1988
4,4'-Thiodianiline	139651	April 1, 1988
Thiourea	62566	January 1, 1988
Thorium dioxide	1314201	February 27, 1987
Tobacco, oral use of smokeless products	---	April 1, 1988
Tobacco smoke	---	April 1, 1988
ortho-Toluidine and its hydrochloride	95534	January 1, 1988
Toxaphene (polychorinated camphenes)	8001352	January 1, 1988
Treosulfan	299752	February 27, 1987
2,4,6-Trichlorophenol	88062	January 1, 1988
Trichloroethylene	79016	April 1, 1988
Tris(1-aziridinyl)phosphine sulfide (thiotepa)	52244	January 1, 1988
Tris(2,3-dibromopropyl)phosphate	126727	January 1, 1988
Trp-P-1 (Tryptophan-P-1)	62450060	April 1, 1988
Trp-P-2 (Tryptophan-P-2)	62450071	April 1, 1988
Unleaded gasoline (wholly vaporized)	---	April 1, 1988
Uracil mustard	66751	April 1, 1988
Urethane (Ethyl carbamate)	51796	January 1, 1988
Vinyl chloride	75014	February 27, 1987

CHEMICALS KNOWN TO THE STATE TO CAUSE REPRODUCTIVE TOXICITY

Aminopterin	54626	July 1, 1987
Chlorcyclizine hydrochloride	82939	July 1, 1987
1,2-Dibromo-3-chloropropane (DBCP)	96128	February 27, 1987
Diethylstilbestrol (DES)	56531	July 1, 1987
Diphenylhydantoin	630933	July 1, 1987
Ethyl alcohol in alcoholic beverages	64175	October 1, 1987
Ethylene oxide	75218	February 27, 1987
Etretinate	54350480	July 1, 1987
Isotretinoin	4759482	July 1, 1987
Lead	---	February 27, 1987
Methyl mercury	---	July 1, 1987
Thalidomide	50351	July 1, 1987
Tobacco smoke (not environmental tobacco smoke)	---	April 1, 1988
Valproate	99661	July 1, 1987
Warfarin	81812	July 1, 1987

Date: April 1, 1988