County of Santa Cruz

COUNTY ADMINISTRATIVE OFFICE

701 OCEAN STREET, SUITE 520, SANTA CRUZ, CA 950604073

(631) 454-2100 FAX: (831) 454-3420 TDD: (831) 454-2123

SUSAN A. MAURIELLO, J.D., COUNTY ADMINISTRATIVE OFFICER

July 28, 2000

AGENDA: August 1, 2000

Board of Supervisors
County of Santa Cruz
701 Ocean Street
Santa Cruz, California 95060

Integrated Pest Management Policy

Dear Members of the Board:

As your Board will recall, on June 6, 2000, this office was directed to develop a pesticide policy similar to the one previously adopted by the City of Santa Cruz. A proposed policy establishing an Integrated Pest Management program for use in controlling pests on County property was presented to your Board on June 6, 2000. At that time, your Board continued consideration of the proposed policy, and directed the County Administrative Officer to negotiate an agreement with the UC Cooperative Extension for the development of a County-wide Integrated Pest Management (IPM) plan. The purpose of this letter is to return the proposed Integrated Pest Management Policy (Attachment A) for your Board's consideration, to provide your Board with supplemental information, to present an agreement with UC Cooperative Extension for your review and approval, and to recommend that your Board transfer funds from contingencies for this purpose.

During your Board's discussion on this matter, several policy questions were raised which have resulted in modification to the recommended IPM Policy. These issues include establishing the level of pesticide use in 1999 as a baseline, the possibility of including pesticides which are known to cause cancer or to have reproductive toxicity, the restriction of pesticides used by the Mosquito Abatement District, and dates for the submittal of reports to your Board.

Baseline Pesticide Use to Measure Progress

At the June 6th meeting, it was suggested that all departments begin to monitor and take steps to reduce or eliminate the quantity or risk levels of the pesticides which are currently being used by departments. It was also suggested that the County establish the 1999 pesticide use level as a baseline and that pesticide use in future years be monitored against this baseline with a goal to reduce the quantity and toxicity of pesticide use in the future.

The IPM Policy directs all departments to use IPM guidelines in their responses to pests on County property and to track the amounts and types of pesticides used. It is anticipated that the implementation of the IPM Policy will result in a reduction in the quantities and risk levels of pesticides used. In regard to the establishment of a baseline quantity, the policy recommended to your Board today has been modified to specifically direct the IPM Coordinator to develop a method of measuring the County's progress towards achieving the goals adopted by your Board in terms of risk or quantities of pesticides used on County property. The method will be included in the annual IPM report and will be used in the annual report to measure progress during the first year towards achieving the adopted goals.

Pesticides Known to Cause Cancer or to Have Reproductive Toxicity

It was suggested that the policy should also restrict those pesticides which are known to cause cancer or to have reproductive toxicity. The original directive from your Board was to establish a policy similar to the one adopted by the City of Santa Cruz, which does not refer to pesticides which are cancer-causing or have reproductive toxicity. Staff has not been able to fully evaluate all of the implications of including such language. However, other jurisdictions have included pesticides identified by the State of California as chemicals known to cause cancer or reproductive toxicity pursuant to the California Safe Drinking Water and Toxic Enforcement Act of 1986 and pesticides classified as proven human carcinogens by the United States Environmental Protection Agency, and it appears that these goals are consistent with the intent of the proposed policy.

The EPA's list of known carcinogens and the California Office of Environmental Health Hazard Assessment's list of chemicals known to cause cancer or reproductive toxicity have been provided to Board members and have been put on file with the Clerk of the Board for review, labeled Attachments C and D

At this time, staff have not determined the relationship of these lists to the EPA's toxicity classifications and have not evaluated the effect of adding these chemicals to the County's IPM policy. From a layperson's point of view and with the limited information available to staff at this time, the inclusion of these classes of pesticides appears to be an appropriate policy decision. Therefore, the elimination of pesticides which are known to cause cancer or to have reproductive toxicity has been added to the goal statement of the recommended IPM policy. However, this is a

complex issue which deserves additional review. Therefore, the recommended IPM Policy and contract have been modified to direct the IPM Coordinator to evaluate the inclusion of these pesticides in the County's IPM Policy and to submit a report and recommendation on this issue for your Board's consideration in the annual IPM report.

Effect of the IPM Policy of the Mosquito Abatement District

The question was raised during discussion as to whether the proposed policy would restrict the use of pesticides currently used by the Mosquito Abatement District. In response to this concern, the proposed IPM Policy has been modified to exempt the use of pesticides by the Mosquito Abatement District from restrictions imposed by this policy. This issue will also be evaluated as part of the annual report.

Policy Goals

The statement of goals has been modified to address concerns expressed by your Board relative to the County's ability to actually achieve the stated goals.

Promulgation of the Integrated Pest Management Policy

In order to make the IPM policy readily accessible to County employees, it is recommended that your Board direct the County Administrative Office to add the Integrated Pest Management Policy to the County's On-line Procedures Manual, under Title 7: Department Procedures.

Implementation Schedule

The letter submitted to your Board on June 6, 2000, contained recommendations for a series of public meetings and status reports to your Board. Your Board requested more specificity in the dates, and the following schedule is recommended:

August 1, 2000:	Board approval of policy and contract
October 1, 2000:	Agricultural Extension completes recruitment, hires IPM Coordinator
November, 2000:	First public meeting
December 12, 2000:	Mid-year status report to Board of Supervisors
February, 2001:	Quarterly public meeting
May, 200 1:	Quarterly public meeting
June, 200 1:	Annual IPM report to Board of Supervisors

Agreement with UC Cooperative Extension

As reported to your Board on June 6th, it is anticipated that UC Cooperative Extension can assume responsibility for the development and implementation of the Integrated Pest

Management program at an annual cost of approximately $45,000. Under the terms of the proposed contract (Attachment B), UC Cooperative Extension will develop a scientifically valid Integrated Pesticide Management program to implement the policy adopted by your Board and will provide and supervise an Integrated Pest Management Coordinator. In addition to developing the IPM program for the County, the Coordinator will be responsible for developing an IPM public education component, convening public meetings to allow review of the plan as it is developed, and reporting to your Board at regular intervals.

The draft contract is provided for your Board's review. The contract has been reviewed and approved by Laura Tourte, the Executive Director of the Santa Cruz UC Cooperative Extension, however, the UC Office in Davis has not yet approved the contract. It is recommended that your Board review and approve this contract in concept and authorize the County Administrative Officer to sign and to make ministerial changes to the agreement if required by the University. Should any substantive changes be required, the contract will be returned for your Board's review and approval.

It is necessary for your Board to approve the attached document transferring appropriations in the amount of $45,000 from contingencies to the budget of Agricultural Extension.

IT IS THEREFORE RECOMMENDED THAT YOUR BOARD

1. Approve the proposed Integrated Pest Management Policy for County property,
2. Approve the contract with the University of California Cooperative Extension and authorize the County Administrative Officer to sign and make ministerial changes to the contract,
3. Approve the transfer of $45,000 from contingencies to the Agricultural Extension budget, and
4. Direct the County Administrative Officer to place the Integrated Pest Management Policy on the County's on-line Procedures Manual.

Very truly yours,

Susan A. Mauriello
County Administrative Officer

Attachments:

A. Integrated Pest Management Policy
B. Draft contract with UC Agricultural Cooperative Extension
C. The Environmental Protection Agency's list of known carcinogens (on file with the Clerk of the Board)
D. The California Office of Environmental Health Hazard Assessment's list of chemicals known to cause cancer or reproductive toxicity (on file with the Clerk of the Board)

cc: Celia Scott, Pesticide Action Coalition
Michael Theriot, Farm Bureau
Laura Tourte, UC Cooperative Extension Director
Dave Moeller, Agriculture Commissioner
Barry Samuel, POSCS Director
Bob Watson, General Services Director
Tom Bolich, Public Works Director
David McNutt, M.D., M.P.H., County Health Officer

SAM/DP

Attachment A:

Proposed Integrated Pest Management Policy

SANTA CRUZ COUNTY
PROPOSED INTEGRATED PEST MANAGEMENT POLICY

I. Statement of Goals

It is the goal of the Santa Cruz County Board of Supervisors to eliminate or reduce to the maximum extent possible the use of pesticides on County property. In establishing this policy, it is acknowledged that this is a long-term goal which cannot be achieved instantaneously. It is also acknowledged that, even after dedicated review and exploration of all available options, it may not be possible to completely eliminate all pesticide use on County property. However, in those situations where pesticides cannot be completely eliminated, it is the Board's intention that the quantity and the risk level of pesticides which are used be reduced to the maximum degree possible. The Board of Supervisors further establishes the following:

A. The County shall reduce its use of pesticides through the development and implementation of a comprehensive Integrated Pest Management plan.

B. Effective January 1, 2002, and except for pesticides granted an exemption pursuant to Section VI below, the following pesticides shall not be applied to County property:
   1. EPA Toxicity Class I pesticides,
   2. Pesticides which contain chemicals identified by the State of California as known to cause cancer or reproductive toxicity pursuant to the California Safe Drinking Water and Toxic Enforcement Act of 1986, or
   3. Pesticides classified as proven human carcinogens by the United States Environmental Protection Agency.

C. Effective January 1, 2003, and except for pesticides granted an exemption pursuant to Section VI below, County departments shall not apply EPA Toxicity Class II pesticides on County property.

D. When pesticides are used on county property, County departments will follow the Integrated Pest Management Guidelines established below.

E. Contractors applying pesticides to County property shall comply with the terms of this policy.

II. Exemptions:

A. Nothing in this policy is intended to apply to pesticide applications which are required to comply with federal, state, or local laws or regulations.

B. Pesticides used by the Santa Cruz County Mosquito Abatement District are exempt from restrictions imposed by this policy.

C. Recommendations regarding further exemptions will be submitted for the Board's consideration in the 2000-O 1 annual IPM report. Exemption recommendations will specifically address the following applications:
   1. Antimicrobial agents
   2. Pesticides used to control burrowing rodents on the Pajaro and Salsipuedes levees
   3. Other applications determined by departments or the IPM Coordinator to warrant possible exemption.

III. Evaluation
   A. The Integrated Pest Management Coordinator in conjunction with County departments shall develop a method of evaluating progress towards achieving the goals adopted by the Board of Supervisors
   B. The Integrated Pest Management Coordinator will include an evaluation of progress towards achieving the goals in the annual report.

IV. Public Involvement
   A. The Integrated Pest Management Coordinator will convene a series of public meetings to allow review of the plan as it is developed.
   B. Schedule of Public Meetings
      1. First public meeting: November 2000
      2. Quarterly public meeting: February 200 1
      3. Quarterly public meeting: May 2000

V. Reports to Board of Supervisors
   A. The Integrated Pest Management Coordinator will provide regular reports to the Board of Supervisors, including a mid-year status report and an annual report
   B. The annual report will include the following:
      1. The recommended Integrated Pest Management plan
      2. Any recommended modifications to the Integrated Pest Management Policy
      3. Recommendations as to whether the Integrated Pest Management Policy should restrict those pesticides which are known to cause cancer or to have reproductive toxicity
      4. Recommended exemptions to the Integrated Pest Management Policy, and a recommended procedure for obtaining further exemptions
      5. Recommendations for increased staff and materials, if needed, to implement the Integrated Pest Management Policy
      6. Comparison of the types and amounts of pesticides used during 2000 to those used in 1999
      7. Recommended method for measuring progress towards achieving the goals established by the Board of Supervisors

C. Schedule of Reports to Board of Supervisors
   1. Mid-year status report: December 12, 2000
   2. Annual IPM report: June 2001

VI. Integrated Pest Management Guidelines: For all pest problems on County property, County departments will utilize the following IPM guidelines:
   A. Perform thorough in-field assessments of each pest problems
   B. Use pest resistant plants and planting systems that minimize pest infestations
   C. Establish injury levels and action thresholds for each individual pest species based on how much biological, aesthetic or economic damage the site can tolerate to determine when corrective action must be initiated.
   D. Establish scouting or inspection procedures to monitor pest population levels and severity of the pest problem.
   E. Select corrective actions using the following criteria:
      1. least disruptive of natural controls
      2. least hazardous to human health
      3. least toxic to nontarget organisms
      4. least damaging to the general environment
      5. most likely to produce permanent reduction of the pest
      6. easiest to carry out effectively
      7. most cost-effective in the short- and long-term
   F. Modify pest ecosystems to reduce food and living space through physical and cultural practices and the use of biological pest controls.
   G. Maintain an accurate record-keeping system to catalogue the following:
      1. the identification of the pest
      2. the size or density of the pest infestation
      3. the geographic distribution of the pest problem
      4. complete information on how you treated the pest, including what, how much, where, when, who, cost, and any application difficulties
      5. the effectiveness of treatment of solving the problem
      6. any observable side effects of the treatment on nontarget organisms
      7. any comments from residents
   H. Recommended modifications to these guidelines will be submitted to the Board for consideration in the 2000-01 annual IPM report.

VII. Notification of Pesticide Use: County departments applying Toxicity Class I, II, or III pesticides shall comply with the following notification procedures:
   A. Signs shall be posted the day before the application of the pesticide and will remain posted at least four days after the application of the pesticide.
   B. Posting shall only be required in areas where the public can reasonably be expected to frequent and as near as possible to the site of the application.

C. Signs shall be posted at every entry point where the pesticide is applied if it is applied in an enclosed area, and in highly visible locations around the perimeter of the area where the pesticide is applied if the pesticide is applied in an open area.

D. Signs shall be of a design that is easily recognizable to the public and workers.

E. Signs shall contain the name and active ingredient of the pesticide, the target pest, the date of pesticide use, the signal word indicating the toxicity category of the pesticide, the date for re-entry if required, and the name and contact number of the County department responsible for the application.

F. County Departments shall not be required to post signs in right-of-way locations that the general public does not use for recreation purposes. However, each department that uses pesticides in such right-of-way locations shall develop and maintain a public access telephone number which will provide the information required in Section III. E. Information shall be available from this telephone number on any pesticides which will be applied within the next four days or that have been applied within the last four days.

G. County Departments using pesticidal baits shall not be required to post notification signs. However, each department using pesticidal baits shall post a permanent sign at the facility where the baits are used. The sign shall indicate the type of baits used in the area, the target pests, the area or areas where the baits are commonly placed, and the contact number of the department responsible for the bait application.

H. Recommended modifications to these notification procedures will be submitted to the Board for consideration in the 2000-01 annual IPM report.

VIII. Training: County departments will provide training in the following areas to staff who are responsible for applying pesticides or who supervise staff who apply pesticides:

A. Principles of Integrated Pest Management

B. Toxicology of commonly used pesticides

C. General introduction to the evaluation of alternative strategic control options

D. Monitoring protocols for different pest problems, including record keeping

E. General introduction to identification of plant diseases and common pest problems procedures for developing site-specific IPM implementation plans

F. Recommended modifications to these training procedures will be submitted to the Board for consideration in the 2000-01 annual IPM report.

Attachment B :

Contract with
UC Cooperative Extension

CONTRACT NO. 12

INDEPENDENT CONTRACTOR AGREEMENT

THIS AGREEMENT is entered into this day of , by and between the COUNTY OF SANTA CRUZ, hereinafter called COUNTY, and the REGENTS OF THE UNIVERSITY OF CALIFORNIA, hereinafter called CONTRACTOR. The parties agree as follows:

1. DUTIES. CONTRACTOR agrees to exercise special skill to accomplish the following result:

- Develop a scientifically valid Integrated Pesticide Management program to implement the Integrated Pest Management Policy adopted by the Board of Supervisors,
- Provide and supervise an Integrated Pest Management Coordinator for Santa Cruz County,
- Additional duties listed in Attachment A.

2. COMPENSATION. In consideration for CONTRACTOR accomplishing said result, COUNTY agrees to pay CONTRACTOR as follows: up to but not exceeding $45,000 on a reimbursement basis.

3. TERM. The term of this contract shall be July 1, 2000 through June 30, 2001.

4. EARLY TERMINATION. Either party hereto may terminate this contract at any time by giving thirty (90) days written notice to the other party.

5. INDEMNIFICATION. The parties hereto shall indemnify and hold one another, their officers, agents and employees harmless from and against any and all claims, losses, liabilities, damages, demands and actions, (all collectively referred to as "liability" herein) arising out of each parties' respective performance of this agreement, but only in proportion to and to the extent such liability is caused by or results from the negligence or intentional act or omission of the indemnifying party, its officers, agents or employees.

6. INSURANCE. The provisions of this paragraph shall not apply if CONTRACTOR is a self-insured public entity. CONTRACTOR, at its sole cost and expense, for the full term of this Agreement (and any extensions thereof), shall obtain and maintain at minimum compliance with all of the following insurance coverage(s) and requirements. Such insurance coverage shall be primary coverage as respects COUNTY and any insurance or self-insurance maintained by COUNTY shall be excess of CONTRACTOR'S insurance coverage and shall not contribute to it.

If CONTRACTOR utilizes one or more subcontractors in the performance of this Agreement, CONTRACTOR shall obtain and maintain Independent Contractor's Insurance as to each subcontractor or otherwise provide evidence of insurance coverage for each subcontractor equivalent to that required of CONTRACTOR in this Agreement, unless CONTRACTOR and COUNTY both initial here

___/___.

55

Initials: ____/____
CONTRACTOR/COUNTY

A. Types of Insurance and Minimum Limits

(1) Worker's Compensation in the minimum statutorily required coverage amounts. This insurance coverage shall not be required if the CONTRACTOR has no employees and certifies to this fact by initialing here: ____/____..

(2) Automobile Liability Insurance for each of CONTRACTORS vehicles used in the performance of this Agreement, including owned, non-owned (e.g., owned by CONTRACTORS employees), leased or hired vehicles, shall each be covered with Automobile Liability Insurance in the minimum amount of $500,000.00 combined single limit per occurrence for bodily injury and property damage. This insurance coverage shall not be required if vehicle use by CONTRACTOR is not a material part of performance of this Agreement and CONTRACTOR and COUNTY both certify to this fact by initialing here ____/____.

(3) Comprehensive or Commercial Liability Insurance coverage in the minimum amount of $1,000,000.00 combined single limit, including coverage for: (a) bodily injury, (b) personal injury, (c) broad form property damage, (d) contractual liability, and (e) cross-liability.

(4) Professional Liability Insurance in the minimum amount of $1 ,000,000.00 combined single limit, if, and only if, this Subparagraph is initialed by CONTRACTOR and COUNTY ____/____.

B. Other Insurance Provisions

(1) If any insurance coverage required in this Agreement is provided on a "Claims Made" rather than "Occurrence" form, CONTRACTOR agrees to maintain the required coverage for a period of three years after the expiration of the Agreement (hereinafter "post agreement coverage") and any extensions thereof. CONTRACTOR may maintain the required post agreement coverage by renewal or purchase of prior acts or tail coverage. This provision is contingent upon post agreement coverage being both available and reasonably affordable in relation to the coverage provided during the term of this Agreement. For purposes of interpreting this requirement, a cost not exceeding 100% of the last annual policy premium during the term of this Agreement in order to purchase prior acts or tail coverage for post agreement coverage shall be deemed to be reasonable.

(2) All required Automobile and Comprehensive or Commercial General Liability Insurance shall be endorsed to contain the following clause:

> "The County of Santa Cruz, its officials, employees, agents and volunteers are added as an additional insured as respects the operations and activities of, or on behalf of, the named insured performed under Agreement with the County of Santa Cruz."

55

(3) All the insurance policies shall be endorsed to contain the following clause:

"This insurance shall not be canceled until after thirty (30) days prior written notice has been given to: Dinah Phillips, County Administrative Office, 701 Ocean Street, Santa Cruz, California, 95060."

(4) CONTRACTOR agrees to provide its insurance broker(s) with a full copy of these insurance provisions and provide COUNTY on or before the effective date of this Agreement with Certificates of Insurance for all required coverages. All Certificates of Insurance shall be delivered or sent to: Dinah Phillips, County Administrative Office, 701 Ocean Street, Santa Cruz, California, 95060.

7. EQUAL EMPLOYMENT OPPORTUNITY. During and in relation to the performance of this Agreement, CONTRACTOR agrees as follows:

A. The CONTRACTOR shall not discriminate against any employee or applicant for employment because of race, color, religion, national origin, ancestry, disability, medical condition (cancer related), pregnancy, gender, marital status, sex, sexual orientation, age (over 1 S), veteran status or any other non-merit factor unrelated to job duties. Such non-discriminatory action shall include, but not be limited to the following: recruitment; advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training (including apprenticeship), employment, upgrading, demotion, or transfer. The CONTRACTOR agrees to post in conspicuous places, available to employees and applicants for employment, notice setting forth the provisions of this non-discrimination clause.

B. If this Agreement provides compensation in excess of $50,000.00 to CONTRACTOR and if CONTRACTOR employs fifteen (15) or more employees, the following requirements shall apply:

(1) The CONTRACTOR shall, in all solicitations or advertisements for employees placed by or on behalf of the CONTRACTOR, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, national origin, ancestry, disability, medical condition (cancer related), pregnancy, gender, marital status, sex, sexual orientation, age (over 1 8), veteran status, or any other non-merit factor unrelated to job duties. In addition, the CONTRACTOR shall make a good faith effort to consider Minority/Women/Disabled Owned Business Enterprises in CONTRACTOR's solicitation of goods and services. Definitions for Minority/Women/Disabled Business Enterprises are available from the COUNTY general Services Purchasing Division.

(2) The CONTRACTOR shall furnish COUNTY Affirmative Action Office information and reports in the prescribed reporting format (PER 4012) identifying the sex, race, handicap or disability, and job classification of its employees and the names, dates and methods of advertisement and direct solicitation efforts made to subcontract with Minority/Women/Disabled Business Enterprises.

55

(3) In the event of the CONTRACTOR's non-compliance with the non-discrimination clauses of this Agreement or with any of the said rules, regulations, or orders said CONTRACTOR may be declared ineligible for further agreements with the COUNTY.

(4) The CONTRACTOR shall cause the foregoing provisions of this Subparagraph 7B. to be inserted in all subcontracts for any work covered under this Agreement by a subcontractor compensated more than $50,000.00 and employing more than fifteen (15) employees, provided that the foregoing provisions shall not apply to contracts or subcontracts for standard commercial supplies or raw materials.

8. INDEPENDENT CONTRACTOR STATUS. CONTRACTOR and COUNTY have reviewed and considered the principal test and secondary factors below and agree that CONTRACTOR is an independent contractor and not an employee of COUNTY. CONTRACTOR is responsible for all insurance (worker's compensation, unemployment, etc.) and all payroll related taxes. CONTRACTOR is not entitled to any employee benefits. COUNTY agrees that CONTRACTOR shall have the right to control the manner and means of accomplishing the result contracted for herein.

PRINCIPAL TEST. The CONTRACTOR rather than COUNTY has the right to control the manner and means of accomplishing the result contracted for.

SECONDARY FACTORS. (a) The extent of control which, by agreement, COUNTY may exercise over the details of the work is slight rather than substantial; (b) CONTRACTOR is engaged in a distinct occupation or business; (c) In the locality, the work to be done by CONTRACTOR is usually done by a specialist without supervision, rather than under the direction of an employer; (d) The skill required in the particular occupation is substantial rather than slight; (e) The CONTRACTOR rather than the COUNTY supplies the instrumentalities, tools and workplace; (f) The length of time for which CONTRACTOR is engaged is of limited duration rather than indefinite; (g) The method of payment of CONTRACTOR is by the job rather than by the time; (h) The work is part of a special or permissive activity, program, or project, rather than part of the regular business of COUNTY; (i) CONTRACTOR and COUNTY believe they are creating an independent contractor relationship rather than an employer-employee relationship; and (j) The COUNTY conducts public business.

It is recognized that it is not necessary that all secondary factors support creation of an independent contractor relationship, but rather that overall there are significant secondary factors which indicate that CONTRACTOR is an independent contractor.

By their signatures to this Agreement, each of the undersigned certifies that it is his or her considered judgement that the CONTRACTOR engaged under this Agreement is in fact an independent contractor.

9. NONASSIGNMENT. Contractor shall not assign this Agreement without the prior written consent of the COUNTY.

Initials: _____/_____
CONTRACTOR/COUNTY

10. RETENTION AND AUDIT OF RECORDS. CONTRACTOR shall retain records pertinent to this Agreement for a period of not less than five (5) years after final payment under this Agreement or until a final audit report is accepted by COUNTY, whichever occurs first. CONTRACTOR hereby agrees to be subject to the examination and audit by the Santa Cruz County Auditor-Controller, the Auditor General of the State of California, or the designee of either for a period of five (5) years after final payment under this Agreement.

11. PRESENTATION OF CLAIMS. Presentation and processing of any or all claims arising out of or related to this Agreement shall be made in accordance with the provisions contained in Chapter 1.05 of the Santa Cruz County Code, which by this reference is incorporated herein.

12. ATTACHMENTS. This Agreement includes the following attachments:

Attachment A: Additional Contractor Duties

17

IN WITNESS WHEREOF, the parties hereto have set their hands the day and year first above written.

COUNTY OF SANTA CRUZ

By: _____
County of Santa Cruz
County Administrative Officer

CONTRACTOR

By: _____

Address: _____

_____

Telephone: _____

Tax ID#: _____

APPROVED AS TO INSURANCE:

By: _____
Risk Management

APPROVED AS TO FORM:

By: _____
County Counsel

DISTRIBUTION: County Administrative Office
Santa Cruz County/UC Cooperative Extension
Auditor-Controller
County Counsel
Risk Management
Contractor

55

Initials: _____/_____
CONTRACTOR/COUNTY

Attachment A

Additional Contractor Duties

The Integrated Pest Management Coordinator will:

1. Develop an Integrated Pesticide Management plan for the County of Santa Cruz, with specific components for each participating department
2. Evaluate and make recommendations as to possible exemptions to the Integrated Pest Management Policy, including the following:
   a. Antimicrobial agents
   b. Pesticides used to control burrowing rodents on the Pajaro and Salsipuedes levees
   c. Pesticides used by the Mosquito Abatement District
   d. Other applications determined by departments and the IPM Coordinator to warrant possible exemption.
3. Develop an IPM public education component
4. Convene public meetings to allow review of the Integrated Pest Management plan as it is developed
   a. First public meeting: November, 2000
   b. Quarterly public meeting: February, 2001
   c. Quarterly public meeting: May, 2001
5. Submit status reports to the Board of Supervisors
   a. Mid-year report, December 12, 2000
   b. Annual report, June 2001, to include the following:
      i. Any recommended modifications to the Integrated Pest Management Policy
      ii. Recommendations as to whether the Integrated Pest Management Policy should also restrict those pesticides which are known to cause cancer or to have reproductive toxicity
      iii. Recommended exemptions to the Integrated Pest Management Policy, and a recommended procedure for obtaining further exemptions
      iv. The recommended Integrated Pest Management plan
      v. Recommendations for increased staff and materials, if needed, to implement the Integrated Pest Management Policy
      vi. Comparison of the types and amounts of pesticides used during 2000 to those used in 1999

55

Initials: _____/_____
CONTRACTOR/COUNTY

COUNTY OF SANTA CRUZ

REQUEST FOR TRANSFER OR REVISION OF BUDGET APPROPRIATIONS AND/OR FUNDS

Department: County Administrative Office   Date: 7/20/00

TO: Board of Supervisors / County Administrative Officer / District Board

I hereby request your approval of the following transfer of budget appropriations and/or funds in the fiscal year ending June 30, ~~19~~ 2001

AUDITORS USE ONLY				
DOCUMENT #	AMOUNT	L/N	T/C HASH	
JE 6	9,000,000	02	1	43

BATCH #	
DATE	Keyed By:

	T/C	INDEX	SUBOBJECT	USER CODE	AMOUNT	ACCOUNT DESCRIPTION *
TRANSFER TO	021	106000	3665	IIII	4500 0.00	Prof & Spec. Services
TRANSFER FROM	022	131375	9695		4500 0.00	Contingencies

Explanation:

To fund the Integrated Pest Management Program

Name Dinky Philly   Title Sr Admin Analyst

Auditor-Controller's Action: I hereby certify that unencumbered balance(s) is/are available in the appropriations/funds and in the amounts indicated above.

Auditor-Controller, by Ronald J. Silva, Deputy   Date 7/25/00

County Administrative Officer's Action: [X] Recommended to Board [ ] Approved [ ] Not Recommended or Approved

County Administrative Officer [signature]   Date 7/25/00

State of California } ss. County of Santa Cruz} As the Clerk of the Board of Supervisors of the County of Santa Cruz, I do hereby certify that the foregoing request for transfer was approved by said Board of Supervisors as recommended by the County Administrative Officer by an order duly entered in the minutes of said Board on

__________, 19___ BY ____________________, Deputy Clerk

(A-C)* Desc: # - Budget Transfer   A-C Review

BRD.NAME   AGENDA DATE   ITEM NO.

Distribution:
White-Board of Supervisors
Yellow-Auditor-Controller
Green-County Administrative Officer
Pink-Originating Department
Goldenrod-Departmental Control Copy

AJD74 (REV 12/94)

55

Attachment C:

The Environmental Protection Agency's
List of Known Carcinogens

II. NAMES AND SYNONYMS OF CARCINOGENS LISTED IN THE 9th REPORT ON CARCINOGENS

CASRN	NAME OR SYNONYM	Listing in the 9th RoC[a]	FIRST LISTED[b]	Page No. III-
II.A. KNOWN TO BE HUMAN CARCINOGENS: This list includes agents, substances, mixtures, and exposure circumstances that are known to be carcinogenic in humans. These carcinogens are profiled in Section III.A.				
1402-68-2	Aflatoxins	K	1	1
	Alcoholic Beverage Consumption	**K**	**9**	**2**
92-67-1	4-Aminobiphenyl (4-Aminodiphenyl)	K	1	3
91-59-8	2-Aminonaphthalene (See 2-Naphthylamine)	K	1	41
	Analgesic Mixtures Containing Phenacetin	K	4	4
	Arsenic Compounds, Inorganic	K	1	4
1332-21-4	Asbestos	K	1	6
446-86-6	Azathioprine	K	4	9
71-43-2	Benzene	K	1	10
92-87-5	Benzidine	K	1	11
542-88-1	bis(Chloromethyl) Ether	K	1	13
55-98-1	Busulfan (See 1,4-Butanediol Dimethylsulfonate)	K	4	17
106-99-0	**1,3-Butadiene**	**K**	**5[c] 9[d]**	**14**
55-98-1	1,4-Butanediol Dimethylsulfonate (Myleran®; Busulfan)	K	4	17
7440-43-9	**Cadmium (under Cadmium and Cadmium Compounds)**	**K**	**1[c] 9[d]**	**17**
10108-64-2	**Cadmium Chloride (under Cadmium and Cadmium Compounds)**	**K**	**1[c] 9[d]**	**17**
1306-19-0	**Cadmium Oxide (under Cadmium and Cadmium Compounds)**	**K**	**1[c] 9[d]**	**17**
10124-36-4	**Cadmium Sulfate (under Cadmium and Cadmium Compounds)**	**K**	**1[c] 9[d]**	**17**
1306-23-6	**Cadmium Sulfide (under Cadmium and Cadmium Compounds)**	**K**	**1[c] 9[d]**	**17**
305-03-3	Chlorambucil	K	2	21
13909-09-6	1-(2-Chloroethyl)-3-(4-methylcyclohexyl)-1-nitrosourea (MeCCNU)	K	6	22
107-30-2	Chloromethyl Methyl Ether	K	1	13
	Chromium Hexavalent Compounds (under Chromium Hexavalent Compounds)	K	1	
8007-45-2	Coal Tar (under Tars and Mineral Oils)	K	1	54
	Coke Oven Emissions	K	1	24

CASRN	NAME OR SYNONYM	Listing in the 9th RoC[a]	FIRST LISTED[b]	Page No. III-
8001-58-9	Creosote (Coal) (under Tars and Mineral Oils)	K	4	54
8021-39-4	Creosote (Wood) (under Tars and Mineral Oils)	K	4	54
14464-46-1	**Cristobalite [under Silica, Crystalline (Respirable Size)]**	**K**	**6[c] 9[d]**	**43**
50-18-0	Cyclophosphamide	K	1	26
59865-13-3	Cyclosporin A (Cyclosporine A; Ciclosporin)	K	8	27
56-53-1	Diethylstilbestrol	K	1	28
1937-37-7	**Direct Black 38**	**K**	**3[c] 9[d]**	**31**
2602-46-2	**Direct Blue 6**	**K**	**3[c] 9[d]**	**32**
	Dyes that Metabolize to Benzidine	**K**	**9**	**29**
	Environmental Tobacco Smoke	**K**	**9**	**33**
66733-21-9	Erionite	K	1	34
75-21-8	**Ethylene Oxide**	**K**	**2[c] 9[d]**	**35**
7758-97-6	Lead Chromate (under Chromium Hexavalent Compounds)	K	1	22
13909-09-6	MeCCNU [See 1-(2-Chloroethyl)-3-(4-methylhexyl)-1-nitrosourea]	K	6	22
148-82-3	Melphalan	K	1	39
298-81-7	Methoxsalen (under Methoxsalen with Ultraviolet A Therapy (PUVA)) (methoxsalen not carcinogenic alone)	K	4	40
	Mineral Oils	K	1	54
505-60-2	Mustard Gas	K	1	41
55-98-1	Myleran® (See 1,4-Butanediol Dimethylsulfonate)	K	4	17
91-59-8	2-Naphthylamine (β-Naphthylamine; 2-Aminonaphthalene)	K	1	41
7280-37-7	Piperazine Estrone Sulfate (under Conjugated Estrogens)	K	4	25
14808-60-7	**Quartz [under Silica, Crystalline (Respirable Size)]**	**K**	**6[c] 9[d]**	**43**
10043-92-2	Radon	K	7	42
	Silica, Crystalline (Respirable Size)	**K**	**6[c] 9[d]**	**43**
	Smokeless Tobacco	**K**	**9**	**46**
16680-47-0	Sodium Equilin Sulfate (under Conjugated Estrogens)	K	4	25

CASRN	NAME OR SYNONYM	Listing in the 9th RoC[a]	FIRST LISTED[b]	Page No. III-
438-67-5	Sodium Estrone Sulfate (under Conjugated Estrogens)	K	5	25
	Solar Radiation and Exposure to Sunlamps and Sunbeds	**K**	**9**	**48**
	Soots	K	1	50
	Strong Inorganic Acid Mists Containing Sulfuric Acid	**K**	**9**	**51**
7789-06-2	Strontium Chromate (under Chromium Hexavalent Compounds)	K	1	22
10540-29-1	**Tamoxifen**	**K**	**9**	**53**
	Tars	K	1	54
52-24-4	Thiotepa [in 7th ARC as tris(1-Aziridinyl)phosphine Sulfide]	K	2[c] 8[d]	58
1314-20-1	Thorium Dioxide	K	2	59
	Tobacco Smoking	**K**	**9**	**60**
15468-32-3	**Tridymite [under Silica, Crystalline (Respirable Size)]**	**K**	**6[c]** **9[d]**	**43**
52-24-4	Tris(1-aziridinyl)phosphine Sulfide (Thiotepa)	K	2[c] 8[d]	58
75-01-4	Vinyl Chloride	K	1	61
13530-65-9	Zinc Chromate (under Chromium Hexavalent Compounds)	K	1	22

[a] Known (K) = *Known to be a Human Carcinogen*
RAHC (R) = *Reasonably Anticipated to be a Human Carcinogen*

Numbers designate the number of the Report on Carcinogens when first listed.
1 = First Annual Report on Carcinogens, 1980
2 = Second Annual Report on Carcinogens, 1981
3 = Third Annual Report on Carcinogens, 1983
4 = Fourth Annual Report on Carcinogens, 1985
5 = Fifth Annual Report on Carcinogens, 1989
6 = Sixth Annual Report on Carcinogens, 1991
7 = Seventh Annual Report on Carcinogens, 1994
8 = Eighth Report on Carcinogens, 1998
9 = Ninth Report on Carcinogens, 2000

[c] First listed as *Reasonably Anticipated to be a Human Carcinogen*

[d] First listed as *Known to be a Human Carcinogen*

Bold entries indicate new listing in The Report on Carcinogens, Ninth Edition

Attachment D:

The California Office of
Environmental Health Hazard Assessment's
List of Chemicals Known to Cause Cancer
or Reproductive Toxicity

STATE OF CALIFORNIA
ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF ENVIRONMENTAL HEALTH HAZARD ASSESSMENT
SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986

CHEMICALS KNOWN TO THE STATE TO CAUSE CANCER OR REPRODUCTIVE TOXICITY

June 02, 2000

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. For easy reference, chemicals which are shown underlined are newly added. Chemicals which are shown with a strikeout are chemicals recommended for removal from the list by the "state's qualified experts."

CHEMICALS KNOWN TO THE STATE TO CAUSE CANCER

Chemical	CAS Number	Date
A-alpha-C (2-Amino-9H-pyrido[2,3-b]indole)	26148685	Janua
Acetaldehyde	75070	April 1
Acetamide	60355	Janua
Acetochlor	34256821	Janua
2-Acetylaminofluorene	53963	July 1
Acifluorfen	62476599	Janua
Acrylamide	79061	Janua
Acrylonitrile	107131	July 1
Actinomycin D	50760	Octob
Adriamycin (Doxorubicin hydrochloride)	23214928	July 1
AF-2;[2-(2-furyl)-3-(5-nitro-2-furyl)]acrylamide	3688537	July 1

Aflatoxins	---	Janua
Alachlor	15972608	Janua
Alcoholic beverages, when associated with alcohol abuse	---	, July 1
Aldrin	309002	July 1
~~Allyl chloride~~ Delisted October 29, 1999	~~107051~~	~~Janua~~
2-Aminoanthraquinone	117793	Octob
p-Aminoazobenzene	60093	Janua
ortho-Aminoazotoluene	97563	July 1
4-Aminobiphenyl (4-aminodiphenyl)	92671	Febru
I-Amino-2,4-dibromoanthraquinone	81492	Augu
3-Amino-9-ethylcarbazole hydrochloride	6109973	July 1
2-Aminofluorene	153786	Janua
1 -Amino-2-methylanthraquinone	82280	Octob
2-Amino-5-(5-nitro-2-furyl)-1,3,4-thiadiazole	712685	July 1
4-Amino-2-nitrophenol	119346	Janua
Amitrole	61825	July 1
Analgesic mixtures containing phenacetin	---	Febru
Aniline	62533	Janua
Aniline hydrochloride	142041	May 1
ot-tho-Anisidine	90040	July 1
ortho-Anisidine hydrochloride	134292	July 1
Antimony oxide (Antimony trioxide)	1309644	Octob
Aramite	140578	July 1
Arsenic (inorganic arsenic compounds))	---	Febru
Asbestos	1332214	Febru
Auramine	492808	July 1
Azacitidine	320672	Janua
Azaserine	115026	July 1
Azathioprine	446866	Febru

Azobenzene	103333	Janua
Benz[a]anthracene	56553	July 1
Benzene	71432	Febru
Benzidine [and its salts]	92875	Febru
Benzidine-based dyes	---	Octob
Benzo[b]fluoranthene	205992	July 1
Benzo[j]fluoranthene	205823	July 1
Benzo[k]fluoranthene	207089	July 1
Benzofuran	271896	Octob
Benzo[a]pyrene	50328	July 1
Benzotrichloride	98077	July 1
Benzyl chloride	100447	Janua
Benzyl violet 4B	1694093	July 1
Beryllium and beryllium compounds	---	Octob
Betel quid with tobacco	---	Janua
2,2-Bis(bromomethyl)-1,3-propanediol	3296900	May 1
Bis(2-chloroethyl)ether	111444	April 1
N,N-Bis(2-chloroethyl)-2-naphthylamine (Chlornapazine)	494031	Febru
Bischloroethyl nitrosourea (BCNU) (Carmustine)	154938	July 1
Bis(chloromethyl)ether	542881	Febru
Bis(2-chloro-1-methylethyl)ether, technical grade	---	Octob
Bitumens, extracts of steam-refined and air refined	---	Janua
Bracken fern	---	Janua
Bromodichloromethane	75274	Janua
Bromoform	75252	April 1
1,3-Butadiene	106990	April 1
1,4-Butanediol dimethanesulfonate (Busulfan)	55981	Febru
Butylated hydroxyanisole	25013165	Janua

beta-Butyrolactone	3068880	July 1
Cacodylic acid	75605	May 1
Cadmium and cadmium compounds	---	Octob
Caffeic acid	331395	Octob
Captafol	2425061	Octob
Captan	133062	Janua
Carbazole	86748	May 1
Carbon tetrachloride	56235	Octob
Carbon-black extracts	---	Janua
Ceramic fibers (airborne particles of respirable size)	---	July 1
Certain combined chemotherapy for lymphomas	---	Febru
Chlorambucil	305033	Febru
Chloramphenicol	56757	Octob
Chlordane	57749	July 1
Chlordecone (Kepone)	143500	Janua
Chlordimeform	6164983	Janua
Chlorendic acid	115286	July 1
Chlorinated paraffins (Average chain length, C12; approximately 60 percent chlorine by weight)	108171262	July 1
p-Chloroaniline	106478	Octob
p-Chloroaniline hydrochloride	20265967	May 1
~~Chlorodibromomethane~~ Delisted October 29, 1999	~~124481~~	~~Janua~~
Chloroethane (Ethyl chloride)	75003	July 1
l-(2-Chloroethyl)-3-cyclohexyl-1-nitrosourea (CCNU) (Lomustine)	13010474	Janua
1-(2-Chloroethyl)-3-(4-methylcyclohexyl)-1- nitrosourea (Methyl-CCNU)	13909096	Octob
Chloroform	67663	Octob
Chloromethyl methyl ether (technical grade)	107302	Febru
3-Chloro-2-methylpropene	563473	July 1

1-Chloro-4-nitrobenzene	100005	Octob
4-Chloro-ortho-phenylenediamine	95830	Janua
p-Chloro-o-toluidine	95692	Janua
p- Chloro-o -toluidine, strong acid salts of	---	May 1
5-Chloro-o-toluidine and its strong acid salts	---	Octob
Chloroprene	126998	June
Chlorothalonil	1897456	Janua
Chlorotrianisene	569573	Septe
Chlorozotocin	54749905	Janua
Chromium (hexavalent compounds)	---	Febru
Chrysene	218019	Janua
C.I. Acid Red 114	6459945	July 1
C.I. Basic Red 9 monohydrochloride	569619	July 1
Cl. Direct Blue 15	2429745	Augu
Cl. Direct Blue 218	28407376	Augu
C.I. Solvent Yellow 14	842079	May 1
Ciclosporin (Cyclosporin A; Cyclosporine)	59865133 79217600	Janua
Cidofovir	113852372	Janua
Cinnamyl anthranilate	87296	July 1
Cisplatin	15663271	Octob
Citrus Red No. 2	6358538	Octob
Clofibrate	637070	Septe
Cobalt metal powder	7440484	July 1
Cobalt [II] oxide	1307966	July 1
Cobalt sulfate heptahydrate	10026241	June
Coke oven emissions	---	Febru
Conjugated estrogens	---	Febru
Creosotes	---	Octob

para-Cresidine	120718	Janua
Cupferron	135206	Janua
Cycasin	14901087	Janua
Cyclophosphamide (anhydrous)	50180	Febru
Cyclophosphamide (hydrated)	6055192	Febru
Cytembena	21739913	May 1
D&C Orange No. 17	3468631	July 1
D&C Red No. 8	2092560	Octob
D&C Red No. 9	5160021	July 1
D&C Red No. 19	81889	July 1
Dacarbazine	4342034	Janua
Daminozide	1596845	Janua
Dantron (Chrysazin; 1,8-Dihydroxyanthraquinone)	117102	Janua
Daunomycin	20830813	Janua
DDD (Dichlorodiphenyldichloroethane)	72548	Janua
DDE (Dichlorodiphenyldichloroethylene)	72559	Janua
DDT (Dichlorodiphenyltrichloroethane)	50293	Octob
DDVP (Dichlorvos)	62737	Janua
N,N'-Diacetylbenzidine	613354	Octob
2,4-Diaminoanisole	615054	Octob
2,4-Diaminoanisole sulfate	39156417	Janua
4,4'-Diaminodiphenyl ether (4,4'-Oxydianiline)	101804	Janua
2,4-Diaminotoluene	95807	Janua
Diaminotoluene (mixed)	---	Janua
Dibenz[a,h]acridine	226368	Janua
Dibenz[a,j]acridine	334430	Janua
Dibenz[a,h]anthracene	53703	Janua
7H-Dibenzo[c,g]carbazole	194592	Janua

Dibenzo[a,e]pyrene	192654	Janua
Dibenzo[a, h]pyrene	189640	Janua
Dibenzo[a,i]pyrene	189559	Janua
Dibenzo[a,l]pyrene	191300	Janua
1,2-Dibromo-3-chloropropane (DBCP)	96128	July 1
2,3-Dibromo-1-propanol	96139	Octob
Dichloroacetic acid	79436	May 1
p-Dichlorobenzene	106467	Janua
3,3'-Dichlorobenzidine	91941	Octob
3,3' -Dictilorobenzidine dihydrochloride	612839	May 1
1,4-Dichloro-2-butene	764410	Janua
3,3'-Dichloro-4,4'-diaminodiphenyl ether	28434868	Janua
1 ,1 -Dichloroethane	75343	Janua
Dichloromethane (Methylene chloride)	75092	April 1
1,2-Dichloropropane	If 78875	Janua
1,3-Dichloropropene	542756	Janua
Dieldrin	60571	July 1
Dienestrol	84173	Janua
Diepoxybutane	1464535	Janua
Diesel engine exhaust	---	Octob
Di(2-ethylhexyl)phthalate	117817	Janua
1,2-Diethylhydrazine	1615801	Janua
Diethyl sulfate	64675	Janua
Diethylstilbestrol (DES)	56531	Febru
Diglycidyl resorcinol ether (DGRE)	101906	July 1
Dihydrosafrole	94586	Janua
Diisopropyl sulfate	2973106	April 1
3,3'-Dimethoxybenzidine (ortho-Dianisidine)	119904	Janua
3,3'-Dimethoxybenzidine dihydrochloride (ortho-Dianisidine dihydrochloride)	20325400	Octob

dihydrochloride)		
Dimethyl sulfate	77781	Janua
4-Dimethylaminoazobenzene	60117	Janua
trans-2-[(Dimethylamino)methylimino]-5-[2-(5-nitro-2- furyl)vinyl]-1,3,4-oxadiazole	55738540	Janua
7,12-Dimethylbenz(a)anthracene	57976	Janua
3,3'-Dimethylbenzidine (ortho-Tolidine)	119937	Janua
3,3'-Dimethylbenzidine dihydrochloride	612828	April 1
Dimethylcarbamoyl chloride	79447	Janua
1 ,l-Dimethylhydrazine (UDMH)	57147	Octob
1,2-Dimethylhydrazine	540738	Janua
Dimethylvinylchloride	513371	July 1
3,7-Dinitrofluoranthene	105735715	Augu
3,9-Dinitrofluoranthene	22506532	Augu
1,6-Dinitropyrene	42397648	Octob
1,8-Dinitropyrene	42397659	Octob
Dinitrotoluene mixture, 2,4-/2,6-	---	May 1
2,4-Dinitrotoluene	1 2 1 1 4 2	July 1
2,6-Dinitrotoluene	606202	July 1
Di-n-propyl isocinchomeronate (MGK Repellent 326)	136458	May 1
1,4-Dioxane	123911	Janua
Diphenylhydantoin (Phenytoin)	57410	Janua
Diphenylhydantoin (Phenytoin), sodium salt	630933	Janua
Direct Black 38 (technical grade)	1937377	Janua
Direct Blue 6 (technical grade)	2602462	Janua
Direct Brown 95 (technical grade)	16071866	Octob
Disperse Blue 1	2475458	Octob
Epichlorohydrin	106898	Octob
Erionite	12510428	Octob

Estradiol 17B	50282	Janua
Estragole	140670	Octob
Estrone	53167	Janua
Estropipate	7280377	Augu
Ethinylestradiol	57636	Janua
Ethyl acrylate	140885	July 1
Ethyl methanesulfonate	62500	Janua
Ethyl-4,4'-dichlorobenzilate	510156	Janua
Ethylene dibromide	106934	July 1
Ethylene dichloride (1,2-Dichloroethane)	107062	Octob
Ethylene oxide	75218	July 1
Ethylene thiourea	96457	Janua
Ethyleneimine	151564	Janua
Fenoxycarb	72490018	June
Folpet	133073	Janua
Formaldehyde (gas)	50000	Janua
2-(2-Formylhydrazino)-4-(5-nitro-2-furyl)thiazole	3570750	Janua
Furan	110009	Octob
Furazolidone	67458	Janua
Furmecyclox	60568050	Janua
Fusarin C	79748815	July 1
Ganciclovir sodium	82410320	Augu
Gasoline engine exhaust (condensates/extracts)		8 Octob
Glasswool fibers (airborne particles of respirable size)	---	July 1
Glu-P-1 (2-Amino-6-methyldipyrido[1,2- a:3',2'-d]imidazole)	67730114	Janua
Glu-P-2 (2-Aminodipyrido[1,2-a:3',2'-d]imidazole)	67730103	Janua
Glycidaldehyde	765344	Janua

Glycidol	556525	July 1
Griseofulvin	126078	Janua
, Gyromitrin (Acetaldehyde methylformylhydrazone)	16568028	Janua
HC Blue 1	2784943	July 1
Heptachlor	76448	July 1
Heptachlor epoxide	1024573	July 1
Hexachlorobenzene	118741	Octob
Hexachlorocyclohexane (technical grade)	---	Octob
Hexachlorodibenzodioxin	34465468	April 1
Hexachloroethane	67721	July 1
Hexamethylphosphoramide	680319	Janua
Hydrazine	302012	Janua
Hydrazine sulfate	10034932	Janua
Hydrazobenzene (1,2-Diphenylhydrazine)	122667	Janua
Indeno [1 ,2,3-cd]pyrene	193395	Janua
/ IQ (2-Amino-3-methylimidazo[4,5-f]quinoline)	76180966	April 1
Iprodione	36734197	May 1
Iron dextran complex	9004664	Janua
Isobutyl nitrite	542563	May 1
Isoprene	78795	May 1
Isosafrole	120581	Octob
Lactofen	77501634	Janua
, Lasiocarpine	303344	April 1
Lead acetate	301042	Janua
Lead and lead compounds	---	Octob
Lead phosphate	7446277	April 1

Lead subacetate	1335326	Octob
Lindane and other hexachlorocyclohexane isomers	---	Octob
Mancozeb	8018017	Janua
Maneb	12427382	Janua
Me-A-alpha-C (2-Amino-3-methyl-9H-pyrido[2,3-b]indole)	68006837	Janua
Medroxyprogesterone acetate	71589	Janua
MeIQ(2-Amino-3,4-dimethylimidazo[4,5-f]quinoline)	77094112	Octob
MeIQx(2-Amino-3,8-dimethylimidazo[4,5-f]quinoxaline)	77500040	Octob
Melphalan	148823	Febru
Merphalan	531760	April 1
Mestranol	72333	April 1
Metham sodium	137428	Nove
8-Methoxypsoralen with ultraviolet A therapy	298817	Febru
5-Methoxypsoralen with ultraviolet A therapy	484208	Octob
2-Methylaziridine (Propyleneimine)	75558	Janua
Methylazoxymethanol	590965	April 1
Methylazoxymethanol acetate	592621	April 1
Methyl carbamate	598550	May 1
3-Methylcholanthrene	56495	Janua
5-Methylchrysene	3697243	April 1
4,4'-Methylene bis(2-chloroaniline)	101144	July 1
4,4'-Methylene bis(N,N-dimethyl)benzenamine	101611	Octob
4,4'-Methylene bis(2-methylaniline)	838880	April 1
4,4'-Methylenedianiline	101779	Janua
4,4'-Methylenedianiline dihydrochloride	13552448	Janua
Methylhydrazine and its salts	---	July 1
Methyl iodide	74884	April 1
Methylmercury compounds	---	May 1

Methyl methanesulfonate		66[illegible]
-Methyl-1 -nitroanthraquinone (of uncertain pur	129157	April 1
N-Methyl-N'-nitro-N-nitrosoguanidine	70257	April 1
N-Methylolacrylamide	924425	July 1
Methylthiouracil	56042	Octob
Metiram	9006422	Janua
Metronidazole	443481	Janua
Michler's ketone	90948	Janua
Mirex	2385855	Janua
Mitomycin C	50077	April 1
Monocrotaline	315220	April 1
5-(Morpholinomethyl)-3-[(5-nitro-furfurylidene)-amino]-2-oxazolidinone	139913	April 1
Mustard Gas	505602	Febru
Nafenopin	3771195	April 1
Nalidixic acid	389082	May 1
I-Naphthylamine	134327	Octob
2-Naphthylamine	91598	Febru
Nickel and certain nickel compounds	---	Octob
Nickel carbonyl	13463393	Octob
Nickel refinery dust from the pyrometallurgical process	---	Octob
Nickel subsulfide	12035722	Octob
Niridazole	61574	April 1
Nitrilotriacetic acid	139139	Janua
Nitrilotriacetic acid, trisodium salt monohydrate	18662538	April 1
5-Nitroacenaphthene	602879	April 1
5-Nitro-o-anisidine	99592	Octob
o-Nitroanisole	91236	Octob

Nitrobenzene	98953	Augu
4-Nitrobiphenyl	92933	April 1
6-Nitrochrysene	7496028	Octob
Nitrofen (technical grade)	1836755	Janua
2-Nitrofluorene	607578	Octob
Nitrofurazone	59870	Janua
1-[(5-Nitrofurfurylidene)-amino]-2-imidazolidinone	555840	April 1
N-[4-(5-Nitro-2-furyl)-2-thiazolyl]acetamide	531828	April 1
Nitrogen mustard (Mechlorethamine)	51752	Janua
Nitrogen mustard hydrochloride (Mechlorethamine hydrochloride)	55867	April 1
Nitrogen mustard N-oxide	126852	April 1
Nitrogen mustard N-oxide hydrochloride	302705	April 1
Nitromethane	75525	May 1
2-Nitropropane	79469	Janua
1 -Nitropyrene	5522430	Octob
4-Nitropyrene	57835924	Octob
N-Nitrosodi-n-butylamine	924163	Octob
N-Nitrosodiethanolamine	1116547	Janua
N-Nitrosodiethylamine	55185	Octob
N-Nitrosodimethylamine	62759	Octob
p-Nitrosodiphenylamine	156105	Janua
N-Nitrosodiphenylamine	86306	April 1
N-Nitrosodi-n-propylamine	621647	Janua
N-Nitroso-N-ethylurea	759739	Octob
3-(N-Nitrosomethylamino)propionitrile	60153493	April 1
4-(N-Nitrosomethylamino)-1-(3-pyridyl)1-butanone	64091914	April 1
N-Nitrosomethylethylamine	10595956	Octob
N-Nitroso-N-methylurea	684935	Octob
N-Nitroso-N-methylurethane	615532	April 1

N-Nitrosomethylvinylamine	4549400	Janua
N-Nitrosomorpholine	59892	Janua
N-Nitrosonornicotine	16543558	Janua
N-Nitrosopiperidine	100754	Janua
N-Nitrosopyrrolidine	930552	Octob
N-Nitrososarcosine	13256229	Janua
o-Nitrotoluene	88722	May 1
Norethisterone (Norethindrone)	68224	Octob
Ochratoxin A	303479	July 1
Oil Orange SS	2646175	April 1
Oral contraceptives, combined	---	Octob
Oral contraceptives, sequential	---	Octob
Oxadiazon	19666309	July 1
Oxazepam	604751	Octob
Oxymetholone	434071	Janua
Oxythioquinox	2439012	Augu
Palygorskite fibers (> 5m m in length)	12174117	Dece
Panfuran S	794934	Janua
Pentachlorophenol	87865	Janua
Phenacetin	62442	Octob
Phenazopyridine	94780	Janua
Phenazopyridine hydrochloride	136403	Janua
Phenesterin	3546109	July 1
Phenobarbital	50066	Janua
Phenolphthalein	77098	May 1
Phenoxybenzamine	59961	April 1
Phenoxybenzamine hydrochloride	63923	April 1

o-Phenylenediamine and its salts	95545	May 1
Phenyl glycidyl ether	122601	Octob
Phenylhydrazine and its salts	---	July 1
o-Phenylphenate, sodium	132274	Janua
PhiP(2-Amino-1-methyl-6-phenylimidazol[4,5-b]pyridine)	105650235	Octob
Polybrominated biphenyls	---	Janua
Polychlorinated biphenyls	---	Octob
Polychlorinated biphenyls (containing 60 or more percent chlorine by molecular weight)	---	Janua
Polychlorinated dibenzo-p-dioxins	---	Octob
Polychlorinated dibenzofurans	---	Octob
Polygeenan	53973981	Janua
Ponceau MX	3761533	April 1
Ponceau 3R	3564098	April 1
Potassium bromate	7758012	Janua
Primidone	125337	Augu
Procarbazine	671169	Janua
Procarbazine hydrochloride	366701	Janua
Procymidone	32809168	Octob
Progesterone	57830	Janua
1,3-Propane sultone	1120714	Janua
Propargite	2312358	Octob
Pronamide	23950585	May 1
beta-Propiolactone	57578	Janua
Propylene oxide	75569	Octob
Propylthiouracil	51525	Janua
Quinoline and its strong acid salts	---	Octob

Radionuclides	---	July 1
Reserpine	50555	Octob
Residual (heavy) fuel oils	---	Octob
Saccharin	81072	Octob
Saccharin, sodium	128449	Janua
Safrole	94597	Janua
Salicylazosulfapyridine	599791	May 1
Selenium sulfide	7446346	Octob
Shale-oils	68308349	April 1
Silica, crystalline (airborne particles of respirable size)	---	Octob
Soots, tars, and mineral oils (untreated and mildly treated oils and used engine oils)	---	Febru
Spironolactone	52017	May 1
Stanozolol	10418038	May 1
Sterigmatocystin	10048132	April 1
Streptozotocin (streptozocin)	/l 18883664	Janua
Styrene oxide	96093	Octob
Sulfallate	95067	Janua
Talc containing asbestiform fibers	---	April 1
Tamoxifen and its salts	10540291	Septe
Terrazole	2593159	Octob
Testosterone and its esters	[illegible]	April 1
2,3,7,8-Tetrachlorodibenzo-para-dioxin (TCDD)	1746016	Janua
1,1,2,2-Tetrachloroethane	79345	July 1
Tetrachloroethylene (Perchloroethylene)	127184	April 1
p-a,a,a-Tetrachlorotoluene	5216251	Janua
Tetrafluoroethylene	116143	May 1

Tetranitromethane	509148	July 1
Thioacetamide	62555	Janua
4,4'-Thiodianiline	139651	April 1
Thiodicarb	59669260	Augu
Thiourea	62566	Janua
Thorium dioxide	1314201	Febru
Tobacco, oral use of smokeless products	---	April 1
Tobacco smoke	---	April 1
Toluene diisocyanate	26471625	Octob
ortho-Toluidine	95534	Janua
ortho-Toluidine hydrochloride	636215	Janua
~~para-Toluidine~~ Delisted October 29, 1999	~~106490~~	~~Janua~~
Toxaphene (Polychlorinated camphenes)	8001352	Janua
Treosulfan	299752	Febru
Trichlormethine (Trimustine hydrochloride)	817094	Janua
Trichloroethylene	79016	April 1
2,4,6-Trichlorophenol	88062	Janua
1,2,3-Trichloropropane	96184	Octob
Trimethyl phosphate	512561	May 1
2,4,5-Trimethylaniline and its strong acid salts	---	Octob
Triphenyltin hydroxide	76879	July 1
Tris(aziridinyl)-para-benzoquinone (Triaziquone)	68768	Octob
Tris(l-aziridinyl)phosphine sulfide (Thiotepa)	52244	Janua
Tris(2-chloroethyl) phosphate	115968	April 1
Tris(2,3-dibromopropyl)phosphate	126727	Janua
Trp-P-l (Tryptophan-P-l)	62450060	April 1
Trp-P-2 (Tryptophan-P-2)	62450071	April 1
Trypan blue (commercial grade)	72571	Octob

Unleaded gasoline (wholly vaporized)	---	April 1
Uracil mustard	66751	April 1
Urethane (Ethyl carbamate)	51796	Janua
Vinclozolin	50471448	Augu
Vinyl bromide	593602	Octob
Vinyl chloride	75014	Febru
4-Vinylcyclohexene	100403	May 1
4-Vinyl-l -cyclohexene diepoxide (Vinyl cyclohexenedioxide)	106876	July 1
Vinyl fluoride	75025	May 1
Vinyl trichloride (I, 1,2-Trichloroethane)	79005	Octob
2,6- Xylidine (2,6-Dimethylaniline)	87627	Janua
~~Zineb~~ Delisted October 29, 1999	~~12122677~~	~~Janua~~

HEMICALS KNOWN TO THE STATE TO CAUSE REPRODUCTIVE TOXICITY

evelopmental toxicity

Acetazolamide	59665	August 20,
Acetohydroxamic acid	546883	April 1, 199
Actinomycin D	50760	October 1,
All-trans retinoic acid	302794	January 1,
Alprazolam	28981977	July 1, 199
Altretamine	645056	August 20,
Amikacin sulfate	39831555	July I, 199
Aminoglutethimide	125848	July I, 199
Aminoglycosides	---	October 1,
Aminopterin	54626	July 1, 198

Amiodarone hydrochloride	19774824	August 26,
Amitraz	33089611	March 30,
Amoxapine	14028445	May 15, 19
Angiotensin converting enzyme (ACE) inhibitors	---	October 1,
Anisindione	117373	October 1,
Arsenic (inorganic oxides)	---	May 1, 199
Aspirin (NOTE: It is especially important not to use aspirin during the last three months of pregnancy, unless specifically directed to do so by a physician because it may cause problems in the unborn child or complications during delivery.)	50782	July 1, 199
Atenolol	29122687	August 26,
Auranofin	34031328	January 29,
Azathioprine	446866	September 1996
Barbiturates	---	October 1,
Beclomethasone dipropionate	5534098	May 15, 19
Benomyl	17804352	July 1, 199
Benzene	71432	December 1997
Benzphetamine hydrochloride	5411223	April 1, 199
Benzodiazepines	---	October 1,
Bischloroethyl nitrosourea (BCNU) (Carmustine)	154938	July 1, 199
Bromacil lithium salt	53404196	May 18, 19
Bromoxynil	1689845	October 1,
Bromoxynil octanoate	1689992	May 18, 19
Butabarbital sodium	143817	October 1,
1,4-Butanediol dimethanesulfonate (Busulfan)	55981	January 1,
Cadmium	---	May 1, 199
Carbamazepine	298464	January 29,
Carbon disulfide	75150	July 1, 198
Carbon monoxide	630080	July I, 198

Carboplatin	41575944	July 1, 199
Chenodiol	474259	April 1, 199
Chinomethionat (Oxythioquinox)	2439012	November
Chlorambucil	305033	January 1,
Chlorcyclizine hydrochloride	1620219	July 1, 198
Chlordecone (Kepone)	143500	January 1,
Chlordiazepoxide	58253	January 1,
Chlordiazepoxide hydrochloride	438415	January 1,
1-(2-Chloroethyl)-3-cyclohexyl-1-nitrosourea (CCNU) (Lomustine)	13010474	July 1, 199
Chlorsulfuron	64902723	May 14, 19
Cidofovir	113852372	January 29,
Cladribine	4291638	September 1996
Clarithromycin	81103119	May 1, 199
Clobetasol propionate	25122467	May 15, 19
Clomiphene citrate	50419	April 1, 199
Clorazepate dipotassium	57109907	October 1,
Cocaine	50362	July 1, 198
Codeine phosphate	52288	May 15, 19
Colchicine	64868	October 1,
Conjugated estrogens	---	April 1, 199
Cyanazine	21725462	April 1, 199
Cycloate	1134232	March 19,
Cycloheximide	66819	January 1,
Cyclophosphamide (anhydrous)	50180	January 1,
Cyclophosphamide (hydrated)	6055192	January 1,
Cyhexatin	13121705	January 1,
Cytarabine	147944	January 1,
Dacarbazine	4342034	January 29,

Danazol	17230885	April 1, 199
Daunorubicin hydrochloride	23541506	July 1, 199
2,4-D butyric acid	94826	June 18, 19
o,p' -DDT	789026	May 15, 19
p,p' -DDT	50293	May 15, 19
2,4-DP (dichloroprop)	120365	April 27, 19
Demeclocycline hydrochloride (internal use)	64733	January 1,
Diazepam	439145	January 1,
Dichlorophene	97234	April 27, 19
Diclofop methyl	51338273	March 5, 1
Dicumarol	66762	October 1,
Diethylstilbestrol (DES)	56531	July 1, 198
Diflunisal	22494424	January 29,
Dihydroergotamine mesylate	6190392	May 1, 199
Dinocap	39300453	April 1, 199
Dinoseb	88857	January 1,
Diphenylhydantoin (Phenytoin)	57410	July 1, 198
Disodium cyanodithiomidocarbonate	138932	March 30,
Doxorubicin hydrochloride	23214928	January 29,
Doxycycline (internal Use)	564250	July 1, 199
Doxycycline calcium (internal use)	94088854	January 1,
Doxycycline hyclate (internal use)	24390145	October 1,
Doxycycline monohydrate (internal use)	1708628 1	October 1,
Endrin	72208	May 15, 19
Ergotamine tartrate	379793	April 1, 199
Estropipate	7280377	August 26,
Ethionamide	536334	August 26,
Ethyl alcohol in alcoholic beverages	---	October 1,
Ethyl dipropylthiocarbamate	759944	April 27, 19

Ethylene dibromide	106934	May 15, 19
Ethylene glycol monoethyl ether	110805	January 1,
Ethylene glycol monomethyl ether	109864	January 1,
Ethylene glycol monoethyl ether acetate	111159	January 1,
Ethylene glycol monomethyl ether acetate	110496	January 1,
Ethylene thiourea	96457	January 1,
Etodolac	41340254	August 20,
Etoposide	33419420	July 1, 199
Etretinate	54350480	July 1, 198
Fenoxaprop ethyl	66441234	March 26,
Fluazifop butyl	69806504	November
Flunisolide	3385033	May 15, 19
Fluorouracil	51218	January 1,
Fluoxymesterone	76437	April 1, 199
Flurazepam hydrochloride	1172185	October 1,
Flurbiprofen	5104494	August 20,
Flutamide	13311847	July 1, 199
Fluticasone propionate	80474142	May 15, 19
Fluvalinate	69409945	November
Ganciclovir sodium	82410320	August 26,
Goserelin acetate	65807025	August 26,
Halazepam	23092173	July 1, 199
Halobetasol propionate	66852548	August 20,
Haloperidol	52868	January 29,
Halothane	151677	September 1996
Heptachlor	76448	August 20,

Hexachlorobenzene	118741	January 1,
Histrelin acetate	---	May 15, 19
Hydramethylnon	67485294	March 5, 1
Hydroxyurea	127071	May 1, 199
Idarubicin hydrochloride	57852570	August 20,
Ifosfamide	3778732	July 1, 199
Iodine-l 31	10043660	January 1,
Isotretinoin	4759482	July 1, 198
Lead	---	February 2
Leuprolide acetate	74381536	August 26,
Levodopa	59927	January 29,
Linuron	330552	March 19,
Lithium carbonate	554132	January 1,
Lithium citrate	919164	January 1,
Lorazepam	846491	July 1, 199
Lovastatin	75330755	October 1,
Mebendazole	31431397	August 20,
Medroxyprogesterone acetate	71589	April 1, 199
Megestrol acetate	595335	January 1,
Melphalan	148823	July 1, 199
Menotropins	9002680	April 1, 199
Meprobamate	57534	January 1,
Mercaptopurine	6112761	July 1, 199
Mercury and mercury compounds	---	July 1, 199
Methacycline hydrochloride	3963959	January 1,
Metham sodium	137428	May 15, 19
Methazole	20354261	December

Methimazole	60560	July 1, 199
Methotrexate	59052	January 1,
Methotrexate sodium	15475566	April 1, 199
Methyl bromide as a structural fumigant	74839	January 1,
Methyl Chloride	74873	March 10,
Methyl mercury		July 1, 198
Methyltestosterone	58184	April 1, 199
Metiram	9006422	March 30,
Midazolam hydrochloride	59467968	July 1, 199
Minocycline hydrochloride (internal use)	13614987	January 1,
Misoprostol	59122462	April 1, 199
Mitoxantrone hydrochloride	70476823	July 1, 199
Myclobutanil	88671890	April 16, 19
Nabam	142596	March 30,
Nafarelin acetate	86220420	April 1, 199
Neomycin sulfate (internal use)	1405103	October 1,
Netilmicin sulfate	56391572	July 1, 199
Nickel carbonyl	13463393	September 1996
Nicotine	54115	April 1, 199
Nifedipine	21829254	January 29,
Nitrapyrin	1929824	March 30,
Nitrogen mustard (Mechlorethamine)	51752	January 1,
Nitrogen mustard hydrochloride (Mechlorethamine hydrochloride)	55867	July 1, 199
Norethisterone (Norethindrone)	68224	April 1, 199
Norethisterone acetate (Norethindrone acetate)	51989	October 1,
Norethisterone (Norethindrone)/Ethinyl estradiol	68224157636	April 1, 199
Norethisterone (Norethindrone)/Mestranol	68224172333	April 1, 199
Norgestrel	6533002	April 1, 199

Oxadiazon	19666309	May 15, 19
Oxazepam	604751	October 1,
Oxymetholone	434071	May 1, 199
Oxytetracycline (internal use)	79572	January 1,
Oxytetracycline hydrochloride (internal use)	2058460	October 1,
Paclitaxel	33069624	August 26,
Paramethadione	115673	July 1, 199
Penicillamine	52675	January 1,
Pentobarbital sodium	57330	July 1, 199
Pentostatin	53910251	September 1996
Phenacemide	63989	July 1, 199
Phenprocoumon	435972	October 1,
Pimozide	2062784	August 20,
Pipobroman	54911	July 1, 199
Plicamycin	18378897	April 1, 199
Polybrominated biphenyls	---	October 1,
Polychlorinated biphenyls	---	January 1,
Potassium dimethyldithiocarbamate	128030	March 30 1
Pravastatin sodium	81131706	March 3, 2
Prednisolone sodium phosphate	125020	August 20,
Procarbazine hydrochloride	366701	July 1, 199
Propargite	2312358	June 15, 19
Propylthiouracil	51525	July 1, 199
Pyrimethamine	58140	January 29,
Quazepam	36735225	August 26,

Pesmethrin	10453868	November
Retinol/retinyl esters, when in daily dosages in excess of 10,000 IU, or 3,000 retinol equivalents. (NOTE: Retinol/retinyl esters are required and essential for maintenance of normal reproductive function. The recommended daily level during pregnancy is 8,000 IU.)	---	July 1, 1989
Ribavirin	36791045	April 1, 1990
Secobarbital sodium	309433	October 1, 1
Sermorelin acetate	---	August 20, 1
Sodium dimethyldithiocarbamate	128041	March 30 19
Streptomycin sulfate	3810740	January 1, 1
Streptozocin (streptozotocin)	18883664	August 20, 1
Sulindac	38194502	January 29,
Tamoxifen citrate	54965241	July 1, 1990
Temazepam	846504	April 1, 1990
Teniposide	29767202	September 1
Terbacil	5902512	May 18, 199
Testosterone cypionate	58208	October 1, 1
Testosterone enanthate	315377	April 1, 1990
2,3,7,8-Tetrachlorodibenzo-para-dioxin (TCDD)	1746016	April 1, 1991
Tetracycline (internal use)	60548	October 1, 1
Tetracyclines (internal use)	---	October 1, 1
Tetracycline hydrochloride (internal use)	64755	January 1, 1
Thalidomide	50351	July 1, 1987
Thioguanine	154427	July 1, 1990
Tobacco smoke (primary)	---	April 1, 1988
Tobramycin sulfate	49842071	July 1, 1990
Toluene	108883	January 1, 1
Triadimefon	43121433	March 30, 1
Triazolam	28911015	April 1, 1990

Tributyltin methacrylate	2155706	December 1,
Triforine	26644462 37273840	June 18, 19
Trilostane	13647353	April 1, 1990
Trimethadione	127480	January 1, 1
Trimetrexate glucuronate	82952645	August 26, 1
Uracil mustard	66751	January 1, 1
Urethane	51796	October 1, 1
Urofollitropin	26995915	April 1, 1990
Valproate (Valproic acid)	9966 1	July 1, 1987
Vinblastine sulfate	143679	July 1, 1990
Vinclozolin	50471448	May 15, 199
Vincristine sulfate	2068782	July 1, 1990
Warfarin	81812	July 1, 1987

Female reproductive toxicity

Aminopterin	54626	July 1, 1987
Amiodarone hydrochloride	19774824	August 26, 1
Anabolic steroids	---	April 1, 1990
Aspirin (NOTE: It is especially important not to use aspirin during the last three months of pregnancy, unless specifically directed to do so by a physician because it may cause problems in the unborn child or complications during delivery.)	50782	July 1, 1990
Carbon disulfide	75150	July 1, 1989
Cidofovir	113852372	January 29,
Chlorsulfuron	64902723	May 14, 199

Clobetasol propionate	25122467	May 15, 199
Cocaine	50362	July 1, 1989
Cyclophosphamide (anhydrous)	50180	January 1, 1
Cyclophosphamide (hydrated)	6055 192	January 1, 1
o,p' -DDT	789026	May 15, 199
p,p' -DDT	50293	May 15, 199
Diflunisal	22494424	January 29,
Dinitrotoluene (technical grade)		August 20, 1
Ethylene oxide	75218	February 27
Etodolac	41340254	August 20, 1
Flunisolide	3385033	May 15, 199
Flurbiprofen	5104494	August 20, 1
Gemfibrozil	25812300	August 20, 1
Goserelin acetate	65807025	August 26, 1
Haloperidol	52868	January 29,
Lead	---	February 27
Leuprolide acetate	74381536	August 26, 1
Levonorgestrel implants	797637	May 15, 199
Nifedipine	21829254	January 29,
Oxydemeton methyl	301122	November 6
Paclitaxel	33069624	August 26, 1

Pimozide	2062784	August 20, 1
Streptozocin (streptozotocin)	18883664	August 20, 1
Sulindac	38 194502	January 29,
Thiophanate methyl	23564058	May 18, 199
Tobacco smoke (primary)	---	April 1, 1988
Triadimefon	43121433	March 30, 1
Uracil mustard	66751	January 1, 1

Male reproductive toxicity

Altretamine	645056	August 20, 1
Amiodarone hydrochloride	19774824	August 26, 1
Anabolic steroids	---	April 1, 1990
Benomyl	17804352	July 1, 1991
Benzene	71432	December 2 1997
Cadmium	---	May 1, 1997
Carbon disulfide	75150	July 1, 1989
Cidofovir	113852372	January 29,
Chlorsulfuron	64902723	May 14,199
Colchicine	64868	October 1, 1
Cyclohexanol	108930	November 6
Cyclophosphamide (anhydrous)	50180	January 1, 1
Cyclophosphamide (hydrated)	6055192	January 1, 1
2,4-D butyric acid	94826	June 18, 19
o,p' -DDT	789026	May 15, 199

p,p' -DDT	50293	May 15, 199
1,2-Dibromo-3-chloropropane (DBCP)	96128	February 27
m-Dinitrobenzene	99650	July 1, 1990
o-Dinitrobenzene	528290	July 1, 1990
p-Dinitrobenzene	100254	July 1, 1990
2,4-Dinitrotoluene	121142	August 20, 1
2,6-Dinitrotoluene	606202	August 20, 1
Dinitrotoluene (technical grade)	---	August 20, 1
Dinoseb	88857	January 1, 1
Doxorubicin hydrochloride	23214928	January 29,
Epichlorohydrin	106898	September
Ethylene dibromide	106934	May 15, 199
Ethylene glycol monoethyl ether	110805	January 1, 1
Ethylene glycol monomethyl ether	109864	January 1, 1
Ethylene glycol monoethyl ether acetate	111159	January 1, 1
Ethylene glycol monomethyl ether acetate	110496	January 1, 1
Ganciclovir sodium	82410320	August 26, 1
Gemfibrozil	25812300	August 20, 1
Goserelin acetate	65807025	August 26, 1
Hexamethylphosphoramide	680319	October 1, 1
Hydramethylnon	67485294	March 5, 19
Idarubicin hydrochloride	57852570	August 20, 1
Lead	---	February 27
Leuprolide acetate	74381536	August 26, 1

Myclobutanil	88671890	April 16, 199
Nifedipine	21829254	January 29,
Nitrofurantoin	67209	April 1, 1991
Oxydemeton methyl	301122	November 6
Paclitaxel	33069624	August 26, 1
Quizalofop-ethyl	76578148	December 2 1999
Sodium fluoroacetate	62748	November 6
Streptozocin (streptozotocin)	18883664	August 20, 1
Sulfasalazine	599791	January 29,
Thiophanate methyl	23564058	May 18,199
Tobacco smoke (primary)	---	April 1, 1988
Triadimefon	43121433	March 30, 1
Uracil mustard	66751	January 1, 1

For questions related to Proposition 65 please contact the Proposition 65 Implementation Office

For technical assistance or comments, please contact our Webmistress.

Last updated on June 6, 2000

SANTA CRUZ AREA
CHAMBER OF COMMERCE

61 | Ocean Street, Suite I ■ Santa Cruz, California 95060
831 457-3713 ■ Fax 831 423-1847
www.santacruzchamber.org

July26, 2000

Santa Cruz County Board of Supervisors
Mardi Wormhoudt, Chair
701 Ocean Street, Suite 520
Santa Cruz, CA 95060

RE: PESTICIDE POLICY

Dear Members of the Board,

The Environmental Affairs Committee of the Santa Cruz Area Chamber of Commerce, a community based organization with over 800 local business members, adopted a Motion supporting the proposed County Pesticide Policy.

The Santa Cruz Area Chamber of Commerce extends to you our full support regarding any long-term goal of eliminating the use of toxic pesticides in this community. We wish to bring to your attention a Pesticide Ordinance that is in place in the city of Arcata. (See enclosure) This Arcata Ordinance is, in our judgement, an excellent example of how a community can take charge of this issue and develop policies that protect the publics health and safety. We further support any efforts by the Board of Supervisors to reduce and eliminate the use of toxic pesticides by Caltrans on our local roads and highways.

We thank the Board of Supervisors for your leadership on this issue and stand ready to work with the County on policies and actions designed to reduce and eliminate the use of toxic pesticides in this county.

Sincerely,

Michael Schmidt, CEO

Cc: C. Douglas, Chair of the Environmental Affairs Committee
K. Whiting, President of the Board of Directors
Enclosure

#55

Arcata Pesticide Ordinance

Arcata, a Northern California, coastal town of 16,000 and home of Humboldt State University — a campus of 7,500 students — experimented with a ban on pesticides for fourteen years.' Recently, the City of Arcata created an ordinance that officially eliminated the use of pesticides on all city properties.

"This first-of-its-kind ordinance confirms Arcata's long time commitment toprotect our residents from the effects of toxic pesticides," said Jennifer Hanan, Arcata Vice Mayor. "Arcata is proving that pest problems can be solved without harming people or the environment. This surely will be a model for other cities: that care about their community's" health and safety."

Two decades ago, city residents became aware of the dangers posed by pesticides. A regional anti-pesticide organization based in town, Californians for Alternatives to Toxics (CATs), acted as a resource center for supplying local residents with information about — and action strategies to stop — the toxic practices. 'Community involvement was achieved by organizing from door-to-door and through the local public radio station, which offered on-the-spot. information about the location of city spray trucks.

"Arcata once sprayed -herbicides on city streets, in its buildings and on trees and lawns in its parks," said Patty Clary, Executive Director of CATs, which helped the city draft the new ordinance. "When residents realized how dangerous and unnecessary these pesticides are, they demanded change — and eventually they got it."

By 1986, the city council was composed of an anti-pesticide majority and had received so much feedback about the city's pesticide use that it created a citizen's task force to search for, non-toxic alternatives. CATs' director was elected chairperson and many meetings were held with city staff to identify the problems that caused pesticide use. A task force cost analysis compared the use of pesticide application to manual vegetation removal and found that increased labor costs were balanced by decreased costs. of purchasing, applying, reporting and storing of the pesticides. The first recommendation was that Arcata conduct small-scale tests, of non-toxic methods to determine the most efficient and cost-effective solutions.

The City Council received the task force recommendations.& May, 1986 and consequently declared a moratorium on the use of all pesticides on city properties. Staff was instructed to try out various options. Through the years, though at times reluctant, city staff adapted to the moratorium by finding new methods to control pests. Often they would devise entirely new ways to do the job because information couldn't be found about established alternatives;

One of the biggest challenges was the city's baseball lawn. Arcata maintains the ball field used by the highly popular semi-pro team, the Humboldt Crabs, who are 'known to sustain winning streaks of 40 or 50 games in a row. Fans wondered what the park staff would do to maintain this athletic field which — like other sports lawns everywhere — was the area-most heavily treated by pesticides in town. Yet, the park's staff created the first non-toxic professional baseball field in the United States, making it a true "field of dreams". Their solutions included designing tarps to cover infield dirt to retard weed growth between games, purchasing special tools to remove weeds and undertaking immediate reseeding to fill gaps were weeds once grew.

According to Dan Diemer, Arcata's Park-Superintendent, "From a management perspective its actually easier to not use pesticides., The amount. of training and paperwork that is required for pesticide use is intense." He ndted that cultural maintenance practices for grass — such as

timely mowing and irrigation in addition to aeration and thatching — can be just as effective as pesticides

Landscapers used plants more adapted to local weather conditions to avoid vulnerability to pest attack. On city streets, weeds sprouting in gutters were controlled by sealing cracks and performing regular street cleaning. For pests in and around buildings; barriers and consistent sanitation practices became the first line of defense. The new methods to manage pests became so routine that workers eventually forgot they were using alternatives to pesticides.. Gradually the experiment begun with the moratorium became part of the regular routine.

Years later when CATs asked for a copy of the city's pesticide ordinance, it was discovered that none had been established. The vice mayor's request that the city council create an {ordinance with the assistance of a working group was met with a resounding '*yea". The working group — consisting of city staff, the city attorney, the vice mayor and CATs' executive director — was charged with drafting an ordinance that established the successful non-to& practices-as permanent city policy.

On February 16, 2000, the Arcata City Council approved by unanimous vote the ordinance which eliminates the use-of pesticides on all properties owned or managed by the city. Arcata's ordinance is unique among cities because it creates an outright ban on all pesticide use, rather than a phased reduction. The ordinance also directs city staff to create a pest control management plan which will be tied to the storm water discharge program to avoid polluting water during pest control activities. In addition, the pest control plan educates residents about non-toxic solutions. Pesticides are described to include fungicides, herbicides, insecticides, nematicides, rodenticides, dessicarik, defoliants and toxic cleaning agents used to kill pests.

The pest control plan will be completed in late 2000 and will establish all permissible pest' control materials and methods, including preventative measures. A methodology will be created to educate the general public and private property owners about these alternatives in Arcata, and its format will make it useful for pest managers in *other* cities.

*****

Californians for Alternatives to Toxics (CATs) was founded in 1982 by community groups from throughout northern California to serve as a resource center for information and action about hazardous chemicals, especially pesticides, and for promotion of alternatives to their use. In addition to ik efforts to end pesticide use on public properties, CATs also focuses' on forestry, roadside and wine grape pesticide use in the northern California region.

For more information contact:
Californians For Alternatives To Toxics
. P.O. 'Box 1195 (990 I Street)
Arcata, California .95518
phone 707-822-8497 fax -7136
catz@reninet.com
http: / /www.reninet.com/catz .

The City of Arcata
Jennifer Hanan, Vice Mayor
. 736 F Street
Arcatd, California 95521
phone 707-269-0394
fax 707-822-8018
jenhanan@hotmail.com

FROM: Celia Scott PHONE NO. : 831 429 6166 Jul. 25 2000 01:59PM P1

0437

Celia Scott, A.I.C.P
ATTORNEY AT LAW
1520 Escalona Drive
Santa Cruz, California 95060
Telephone and FAX: 831-429-6166

July 25, 2000

Board of Supervisors
County of Santa Cruz
701 Ocean Street
Santa Cruz, CA 95060

Re: Proposed Pesticide Policy

Dear Members of the Board:

It is my understanding that a continued hearing on the adoption of a proposed pesticide policy for the county will take place on August 1 at the Board meeting. Since I will not be able to attend, I would ask that this letter be made part of the record.

As I testified at the June 6 Board meeting on this matter, I am unable to support the proposed pesticide policy without significant modifications. Many of my concerns have been expressed as well in a letter of June 26, 2000 from Greg Small, Executive Director of Pesticide Watch. Although, like Mr. Small, I applaud the Board for addressing this serious problem, I would also urge the Board to significantly strenthen the policy as proposed, and to engage in further consultation with concerned members of the community.

The following changes are essential, in my opinion, and should be added to the policy.

1) Strike the phrase "to the maximum extent feasible" from Goals I.A. and I.B. Advance the elimination date to Jan. 1, 2001.

2) Add: Immediately eliminate the use of any pesticide identified by the State of California as a chemical known to the state to cause cancer or reproductive toxicity pursuant to the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Prop 65); or any pesticide classified as a known, probable, or possible carcinogen by the U.S.EPA, Office of Prevention, Pesticides, and Toxic Substances. This approach has been successfully implemented by the City of San Francisco, and the City of Arcata, among others.

3) Require the annual report to be submitted to the Board of Supervisors by June 2001 and specify the exact content of that report. (This information is in the staff letter but is not incorporated into the actual policy language.)

4) Require immediate implementation of the provisions of the policy (Section III) for public notice of pesticide applications.

5) Require all County Departments to immediately implement procedures to monitor and take steps to reduce the quantity and risk levels of pesticides currently used, as described in Attachment A (Survey of 1999 Pesticide Use).

FROM : Celia Scott PHONE NO. : 831 429 6166 Jul. 25 2000 02:03PM P1

Board of Supervisors
Pesticide Policy - August 1, 2000 agenda.
page two

5) Specifically disallow any increase in the total quantify of pesticides used by County departments after adoption of the policy.

6) Include language in the policy itself which formally requires creation of a Pest Management Team to oversee implementation of the policy, and includes concerned members of the public. References in the staff letter to an IPM Coordinator and public meetings: are not sufficient in the absence of express language in the policy. . . Public involvement in the process of implementation is essential (Greg Small's letter describes in detail the process in the City of San Francisco.)

7) Require that public education on the effects of pesticides and alternatives to pesticides be included in the policy. Public education programs are., over and above implementation of the policy and should include outreach to members of the community who are pesticide users for household and other purposes. . .

8) Immediate compliance, by contractors applying any pesticides to County property should be explicitly required.

A mandate by the voters of Santa Cruz County to eliminate pesticide use has already occurred in the vote on Measure C in 1990. Furthermore, the County General Plan for six years has contained a policy calling for the elimination by the County of its use of toxic" and hazardous materials; General Policy 6. 6; 2 states: "Eliminate wherever possible, and minimize where elimination is not feasible. the use of hazardous and toxic materials in the operations and programs of County government."

Affirmative action by the County Board of Supervisors to carry out these existing policies is long overdue. Furthermore it is now clear that that elimination and major reduction of pesticide use by governmental entitites is feasible, with the outstanding examples of the City of Arcata and the City of San Francisco. Many of the concerns expressed in the staff letter ('e.g., protection of the levees) have been successfully dealt with by. the City and County of San Francisco over the last several years since an ordinance was adopted by their. Board of Supervisors. All of their experience is available for use by our community. We do not need to start out on an uncharted voyage in this area of public policy.

I would urge Board members to read, or reread, Rachael Carson's book "Silent Spring". There is no excuse for failing to heed her warnings of. public health and environmental degredation arising from the excessive and unnecessary, in many cases, use of . . synthetic pesticides, herbicides, and insecticides. Nearly 40 years have, passed since her warnings, and we are seeing the results', everywhere. Please make this issue a top priority, and adopt a policy which will make a real difference in protecting public health and our environment.

Yours truly,

Celia Scott

Celia Scott

55

Pesticide Policy

June 6, 2000 S.C. Co. Bd. of Supervisors

Model Arcata ordinance offically eliminated the use of pesticides on all city properties (Feb., 2000)

Articles and resources submitted by Marilyn Garrett

688-4603

co-founder Farm without Harm

member Toxics Action Coalition

6-5-00

over for specific inclusions

0440

A Hidden Violence

BY SANDRA STEINGRABER

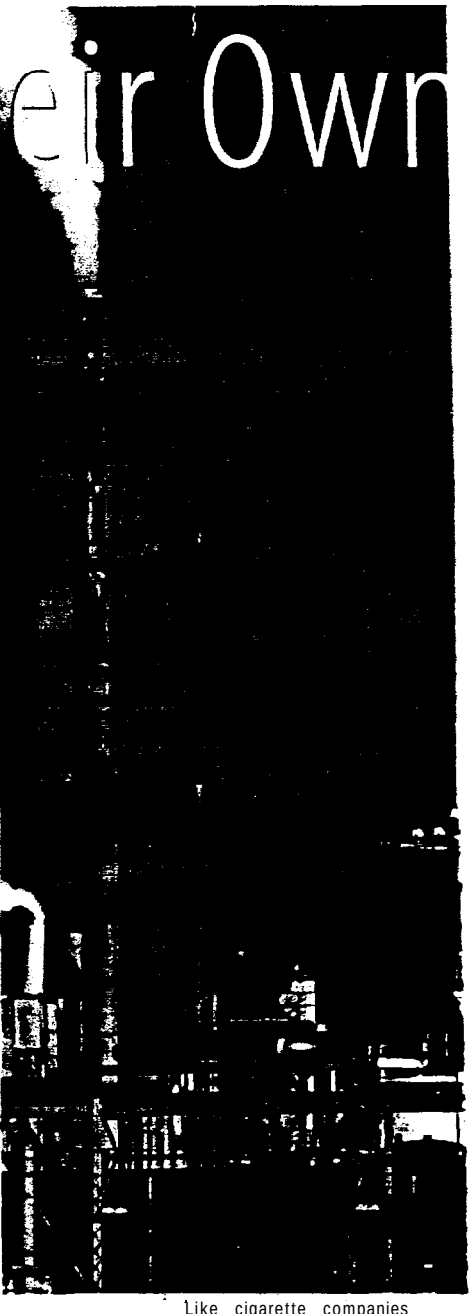
Sandra Steingraber, a biologist, poet and survivor of cancer in her 20s, brings all three perspectives together in her powerful and eloquent book *Living Downstream: An Ecologist Looks at Cancer and the Environment*. She brings home the point that the health of the Earth is reflected in our own health. The following excerpt is from her chapter entitled, "Ecological Roots."

In full possession of our ecological roots, we can begin to survey our present situation. This requires a human rights approach. Such an approach recognizes that the current system of regulating the use, release, and disposal of known and suspected carcinogens — rather than preventing their generation in the first place — is intolerable. So is the decision to allow untested chemicals free access to our bodies, until which time they are finally assessed for carcinogenic properties. Both practices show reckless disregard for human life.

"When carcinogens are deliberately or accidentally introduced into the environment, some number of vulnerable persons are consigned to death."

A human rights approach would also recognize that we do not all bear equal risks when carcinogens are allowed to circulate within our environment. Workers who manufacture carcinogens are exposed to higher levels, as are those who live near the chemical graveyards that serve as their final resting place. Moreover, people are not uniformly vulnerable to effects of environmental carcinogens. Individuals with genetic predispositions, infants whose detoxifying mechanisms are not yet fully developed, and those with significant prior exposures may all be affected more profoundly. Cancer may be a lottery, but we do not each hold equal chances of "winning." When carcinogens are deliberately or accidentally introduced into the environment, some number of vulnerable persons are consigned to death. The impossibility of tabulating an exact body count does not alter this fact. A human rights approach to cancer strives, nonetheless, to make these deaths visible.

Suppose we assume for a moment that the most conservative estimate concerning the proportion of cancer deaths due to environmental causes is absolutely accurate. This estimate, put forth by those who dismiss environmental carcinogens as negligible, is two percent. Though others have placed this number far higher, let's assume for the sake of argument that this lowest value is absolutely correct. Two percent means that 10,940 people in the United States die each year from environmentally caused cancers. This is more than the number of women who die each year from hereditary breast cancer — an issue that has launched multi-million-dollar research initiatives. This is more than the number of children and teenagers killed each year by firearms — an issue that is considered a matter of national shame. It is more than three times the number of nonsmokers estimated to die each year of lung cancer caused by exposure to secondhand smoke — a problem so serious it warranted sweeping changes in laws governing air quality in public spaces. It is the annual equivalent of wiping out a small city. It is 30 funerals every day.



Like cigarette companies long denied the link between smoking and lung cancer, so does the chemical industry insist that their products are innocent of harming human health. The public's common sense and experience with corporate public relations ploys tell us better.

None of these 10,940 Americans will die quick, painless deaths. They will be amputated, irradiated, and dosed with chemotherapy. They will expire privately in hospitals and hospices and be buried quietly. Photographs of their bodies will not appear in newspapers. We will not know who most of them are. Their anonymity, however, does not moderate this violence. These deaths are a form of homicide. •

Spring 2000

Arcata Pesticide Ordinance

Arcata, a Northern California coastal town of 16,000 and home of Humboldt State University — a campus of 7,500 students — experimented with a ban on pesticides for fourteen years. Recently, the City of Arcata created an ordinance that officially eliminated the use of pesticides on all city properties.

'This first-of-itskind ordinance confirms Arcata's long time commitment to Protect our residents from the effects of toxic pesticides," said Jennifer Hanan, Arcata Vice Mayor. "Arcata is proving that pest problems can be solved without harming people or the environment. This surely will be a model for other cities: that care about their community's' health and safety;"

Two decades ago, city residents b&came aware of the dangers posed by pesticides. A regional anii-pesticide organization based in town, Californians for Alternatives to Toxics (CATs), acted as a resource center for supplying local residents with information about — and action strategies to stop — the toxic practices. 'Community involvement was achieved by organizing from door-to-door and through the local public radio station, which 'offered on-the-spot information about the location of city, spray trucks.

"Arcata once sprayed herbicides on city streets, in its buildings and on trees and lawns in its parks," said Patty .Clary, Executive Director of CATs, which helped the city draft the new' ordinance. "When residents realized how dangerous and unnecessary these pesticides are, they demanded change — and eventually they got it."

By 1986, the city council 'was composed of an anti-pesticide majority and had received so-much feedback about the city's pesticide use that it created a citizen's task force to search for non-toxic alternatives. CATs' director was elected chairperson and many meetings were held with city staff to identify the problems that caused pesticide use. A task force cost analysis compared the use of pesticide application to manual vegetation removal and found that increased labor costs were balanced by decreased costs of purchasing, applying, reporting and storing of the pesticides. The first recommendation was that Arcata conduct small-scale tests, -'of non-toxic methods to determine the most efficient and cost-effective solutions.

The City Council received the task force recommendations.& May, 1986 and consequently declared a moratorium on the use of all pesticides on city properties. Staff was instructed to try out various options. Through the years, though at times reluctant, city staff adapted to the moratorium by finding new methods to control pests. Often they would devise entirely new ways to do the job because information couldn't be found about established alternatives..

One of the biggest challenges was the city's baseball lawn. Arcata maintains the ball field used by the highly popular semi-pro team, the Humboldt Crabs, who are known to sustain winning 'streaks of 40 or 50 games in a row. Fans 'wondered what the park staff would do-to, maintain this athletic field which — like other sports lawns everywhere — was the area most heavily treated by pesticides in town. Yet, the park's staff created the first non-toxic professional baseball field in the U&ted-States, making it a true "field of dreams". Their solutions'included designing tarps to cover infield dirt to retard weed growth between games, purchasing special tools to remove weeds and undertaking immediate reseeding to fill gaps were weeds once grew.

According to Dan Diemer, Arcata's Park Superintendent, "From a management perspective its actually easier to not use pesticides.. The amount. of training and paperwork that is required for pesticide use is intense." He noted that cultural maintenance practices for grass — such as

timely mowing and irrigation in addition to aeration and thatching — can be just as effective as pesticides.

Landscapers used plants more adapted to local weather conditions to avoid vulnerability to pest attack. On city streets, weeds sprouting in gutters were controlled by sealing cracks and performing regular street cleaning. For pests in and around buildings, barriers and consistent sanitation practices became the first line of defense. The new methods to manage pests became so routine that workers eventually forgot they were using alternatives to pesticides., Gradually the experiment begun with the moratorium became part of the regular routine.

Years later when CATs asked for a copy of the city's pesticide ordinance; it was discovered, that none had been established. The vice mayor's request that the city council create an ordinance with the assistance of a working group was met with a resounding "yea". The working group — consisting of city staff, the city attorney, the vice mayor and CATs' executive director -was charged with drafting an ordinance that established the successful non-toxic practices-as permanent city policy.,

On February 16, 2000, the Arcata City Council approved by unanimous vote the ordinance which eliminates the use of pesticides on all properties owned or managed by the city. Arcata's ordinance is unique among cities because it creates an outright ban on all pesticide use, rather than a phased reduction. The ordinance also directs city staff to create a pest control management plan which will be tied to the storm water discharge program to avoid polluting water during pest control activities. In addition, the pest control plan educates residents about non-toxic solutions. Pesticides are described to include fungicides, herbicides, insecticides, nematicides, rodenticides, dessicants, defoliants and toxic cleaning agents used to kill pests.

The pest control plan &ill be completed in late 2000 and will establish all permissible pest control materials and methods, including preventative measures. A methodology will be created to educate the general public and private property owners' about these alternatives in Arcata, and .its format will make it useful for pest managers in other cities.

*****

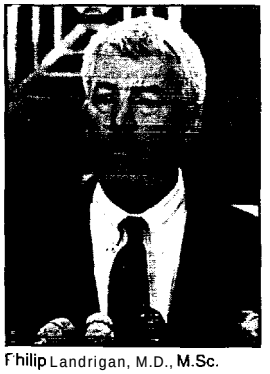
Californians for Alternatives to Toxics (CATs) was founded in 1982 by community groups from throughout northern California to serve as a resource center for information and action about hazardous chemicals, especially pesticides, and for promotion of alternatives to their use. In addition to its efforts to end pesticide use on public properties, CATs also focuses on forestry,' roadside and wine grape pesticide use in the northern California region.

For more information contact:
Californians For Alternatives To Toxics
P.O. Box 1195 (990 I Street)
Arcata, California 95518
phone 707-822-8497 fax - 7 1 3 6
catz@reninet.com
http://www.reninet.com/catz

The City of Arcata
Jennifer Hanan, Vice Mayor
736 F Street
Arcata, California -95521
phone 707-269-0394
fax 707-822-8018
jenhanan@hotmail.com

Protecting Children from Pesticide Exposure in Schools

by Philip Landrigan, M.D., M.Sc.



Philip Landrigan, M.D., M.Sc.

Safeguarding children's health while at school is a priority for parents, teachers, school administrators, la&-takers, and clinicians. Yet children are continually and unknowingly exposed to toxic chemicals while in and around school buildings. Substantial scientific evidence indicates that children are at risk for disease as a result of these exposures.

Why Focus on Pesticides?

Pesticides are commonly used in schools as well as homes and day care centers to control roaches, rats, termites, ants, and other vermin. They are also used widely in agriculture in the U.S. Despite widespread use of pesticides, little is known about the actual levels of pesticide exposure in children from their food and environment, Consequently, little is known about the health effects of these exposures in children. Limited available data do indicate, however, that pesticides are likely to cause harm in humans even at low-level exposures.

Two of the most popular classes of insecticides used in the U.S.-organophosphates and carbamates-are designed as neurotoxins, poisoning the nervous systems of unwanted insects. These pesticides also affect the nervous systems of people. Organophosphates and carbamates harm both insects and humans by interfering with an enzyme in the brain, acetylchlolinesterase, which regulates signals in the insect and human nervous systems.[1] Acute poisoning by these insecticides in humans has caused a myriad of short and long-term nervous system disturbances, including agitation, insomnia, muscle weakness, respiratory agitation, nervousness, irritability, forgetfulness, confusion, and depression. [2,3]

There is substantial evidence in animal studies and limited evidence in studies of adult humans that *chronic, low-level* exposure to organophosphates may also affect neurologic functioning and neurodevelopment in humans.[2,3] Given this evidence, there is a strong likelihood that low-level chronic *exposure* adversely affects *children's* nervous systems, resulting in lower cognitive function, behavior disorders, and other subtle neurological problems. Studies also indicate that exposure to organophosphates disrupts the part of the nervous system that regulates the motor functioning of the lungs. This has lead researchers to hypothesize that pesticides are among the preventable causes of asthma in children.[2]

In addition to nervous system disruption, studies have noted links between cancer in children and their exposures to pesticides.[4,5] Leukemia and brain cancer-the two most common forms of childhood cancer-have increased substantially in incidence since the mid-1970s.[6] However, these findings were limited by small sample sizes and imprecise information on children's actual exposure to pesticides. Other studies have found that parental exposure to pesticides is associated with certain birth defects such as neural tube defects.[7,8]

Why Focus on Children?

Many pesticides may be more harmful to children, and at lower doses, than they are to adults. Children breathe more air per pound of body weight than do adults, and they are more likely to put toys and hands in their mouths than adults are. Both of these factors cause them to be exposed to a greater quantity of chemicals in their environment.[9]

Moreover, the nervous system undergoes rapid growth and development in the first years of life. During this period, structures are developed and vital connections are established. Indeed, development of the nervous system continues all through childhood, as is evidenced by the fact that children continue to acquire new skills as they grow-crawling, walking, talking, reading, and writing.

A child's developing nervous system is not well able to repair any structural damage caused by environmental toxins. Thus, if cells in the developing brain are destroyed by chemicals, there is a risk that the resulting dysfunction will be irreversible. The consequences can be loss of intelligence and alteration of normal behavior. Also, because children have more future years of life than adults, they have more time to develop chronic disease, such as adult forms of cancer, triggered by early exposures to toxins.[9]

A 1993 National Academy of Sciences report, Pesticides *in the Diets of Infants* and *Children,* called attention to the specific vulnerability of children to many pesticides. This report led to the Congress unanimously passing the 1996 Food Quality Protection Act, which calls for the EPA to establish standards for pesticide residues on foods that account for 1) children's unique sensitivity to environmental toxins and 2) children's exposure to multiple pesticides-both dietary and nondietary-with common toxic effects.[9]

Although there are no data on the levels of pesticide exposure in children, studies have demonstrated that adult exposure is widespread. For example, chlorpyrifos, an organophosphate pesticide, was found in 82% of approximately 1,000 adults whose urine was tested through the National Health and Nutrition Examination Survey.[10] The detection of chlorpyrifos in the majority of those tested indicates frequent exposure, since chlorpyrifos is eliminated from the body in 3-6 days.[11] If chlorpyrifos is common in adults, exposure in children is likely also to be common. Levels in children may be even higher than those in adults given that children are potentially exposed to a great quantity of chemicals.

0444

Why Focus on Schools?

Children are exposed to pesticides on a daily basis from multiple sources. Fruits and vegetables contain residues of pesticides applied in agriculture. Ninety percent of American homes use pesticides.[12] Schools are also common sites of pesticide use. A recent survey of Connecticut schools found that 87% of the state's school districts responding to a survey (77 of 147 school districts) sprayed pesticides inside school buildings; 32% sprayed pesticides routinely regardless of whether there was a pest problem.[13] A 1998 survey of California school districts found that 93% of 46 responding school districts used pesticides.[14] A 1993 survey of 261 New York schools found that 87% used pesticides.[15]

Eliminating pesticides from the school environment is critical to lowering children's total exposure. Children spend an average of 6-7 hours per day, 5 days per week, 180 days per year, in school. The only other place in which children spend more time is their home. In order to protect children's health wherever they work and play, pesticide use in schools must be reduced, and families must be routinely notified whenever pesticides will be applied in schools.

The Center for Children's Health and the Environment *(CCHE)* at Mount Sinai School of Medicine supports *efforts* at the local, state, and *federal* level *to avoid* pesticide use in and around *schools* and *to notify* children and parents when pesticides will be used. *CCHE's* mission is *to* promote the health of children by conducting environmental health and policy research. CCHE was established in 1998 with the support *of the* Pew Charitable *Trusts. CCHE's* director is Philip *J.* Landrigan M.D., *M.Sc.*, a pediatrician who chairs the Department of Community and Preventive Medicine *at* Mount Sinai. Questions or comments may *be* directed to Ashley *Coffield* in *CCHE's* Washington, D.C. office at *(202) 776-1105 or* e-mail *ac@acpm.org.*

Endnotes

1 Ecobichon D. Organophosphorus ester insecticides. In: Pesticides and Neurological Diseases (Ecobichon DJ, Joy RM, eds). Boca Raton, FL:CRC Press, 1994;171-250.

2 Eskenazi B, Bradman A, Castorina, R. Exposures of children to organophosphate pesticides and their potential adverse health effects. Environ Health Perspect 1999: 107(S-3):409-419.

3 Weiss, Bernard. Pesticides as a source of de velopment disabilities. MRDD Research Reviews 1997; 3:246-256.

4 Liess JK, Savitz DA. Home pesticide use and childhood cancer: a case-control study. Am J Public Health 1995; 85:249-252.

5 Davis JR, et al. Family pesticide use and childhood brain cancer. Arch Environ Contam Toxicol 1993; 24:87-92.

6 Ries LAG, et al. (eds). Cancer incidence and survival among children and adolescents: United States SEER program 1975-1995. National Cancer Institute, SEER Program. NIH Pub. No. 99-4649. Bethesda, MD, 1999.

7 Shaw GM, Wasserman CR, O'Malley CD. Maternal pesticide exposures as risk factors for orofacial clefts and neural tube defects. Am J Epidemiol 1995; 14 1(suppl 11):S3.

8 Blatter BM, et al. Paternal occupational exposure around conception and spina bifida in offspring. Am J Ind Med 1997; 32:283-291.

9 National Research Council. Pesticides in the diets of infants and children. Washington: National Academy Press. 1993.

10 Hill RH, et al. Pesticide residues in urine of adults living in the United States: reference range concentrations. Environ Res 1995; 71:99-108.

11 Bradway D. Shafik T, Lores E. Comparison of cholinesterase activity, residue levels, and urinary metabolite excretioni of rates exposed to organophosphorus pesticides. J Agric Food Chem 1977; 25:1353-1358.

12 Gurunathan S, et al. Accumulation of chlorpyrifos on residential surfaces and toys accessible to children. Environ Helath Perspect 1998; 106:1-6.

13 Addiss SS, Alderman NO, Brown DR. Each CN, and Wargo J. Pest control practices in Connecticut public schools. Environment and Human Health, Inc., North Haven, CT. 1999.

14 Kaplan J, Marquardt S, Barber W. Failing Health: Pesticide Use in California Schools. CALPIRG Charitable Trust. San Francisco: 1998.

15 Volberg DI, Surgan MH, Jaffe S, Hamer D, Sevinsky JA. Pesticides in Schools: Reducing the Risks. New York Office of the Attorney General. New York: 1993.

Alternatives to Using Pesticides in Schools: A Beyond Pesticides/NCAMP Factsheet

Those who argue that integrated pest management (IPM) requires an ability to spray pesticides immediately after identifying a pest problem are not describing IPM. Take for example the General Services Administration (GSA), the government agency that manages federal buildings, and its definition of IPM, "a process for achieving long-term, environmentally-sound pest suppression through the use of wide variety of technological and management practices." Control techniques in an IPM program extend beyond the application of pesticides to include structural and procedural modification that reduce the food, water, harborage, and access used by pests (GSA, Public Buildings Service, Specification No. BM-5-1, January, 1989, p.1). The IPM policy encourages the avoidance of pesticide use with the requirement: "The Contractor shall use non-pesticide methods of control wherever possible." The policy says that portable vacuums rather than pesticide sprays shall be used for initial clean-outs and that trapping devices rather than pesticide sprays shall be used for indoor fly control whenever appropriate.

Albert Greene, National IPM Coordinator for the GSA, has successfully applied IPM in the 30 million square feet of indoor federal space that comes under the GSA's National Capital Region jurisdiction. Greene reports that since the initiation of the program in 1988, pest problems in the buildings have generally declined and occupant satisfaction has increased, all the while contractors use less than 2% of the pesticides that was routinely used. Greene states that "GSA's program is a conclusive demonstration that structural IPM works; that is can be pragmatic, economical, and effective on a massive scale."

In schools, we see repeated signs that alternatives work. Montgomery County Public Schools in Maryland is one of the best known examples of school IPM. Reduction of pesticide use by 90% and use of least toxic pesticides when pesticides are required have made school and work safer. Bill Forbes administers a pest management program for 200 sites. He reduced pesticide use from 5,000 applications in 1985 to none four years later, saving the school district $1800 per school and $30,000 at the food service warehouse. School district employees who implement the system receive 60-100 hoursbf training per year. The success of his program is largely due to the preventive measures he uses and on-going monitoring to determme if, when, and where pest populations warrant action.

Steve Tvedten's company, Get Set, contracts with hundreds of schools in Michigan to do least toxic IPM. When contacted by a school, the company'--does an initial inspection to find problem areas, which are addressed immediately. They then meet with school personnel to train them in IPM methods and pro&de them with a manual. Their on-going service consists of periodic inspections and consultations. Parents are notified when any pesticides, including least toxic ones, are used in schools.

The above examples are just a sampling *of effective IPM* programs that dot the *country.* For additional *schools that have successfully implemented IPM* withoui *using* toxic *pesticides, please* contact Beyond *Pesticides/NCAMP.*

Pesticide Education Center

For a safe environment for workers and consumers

0445

P.O. Box 420870
San Francisco, CA 94142-0870
U.S.A.

942 Market Street, Suite 409
San Francisco, California 94102

Telephone 415.391-8511
Facsimile 415.391-9159
e-mail pec@igc.apc.org

June 2, 1999

Dear Colleague;

I am writing this letter at the request of parents who are concerned about the spraying of pesticides by the University of California Berkeley at the Gil Tract site in Albany. They wish the University to use safer, nontoxic methods in place of the planned spraying of the herbicide glyphosate (Roundup@) in June and July.

Although glyphosate is not in the highest toxicity category for acute poisoning, it is a toxic formulation containing a mixture of other ingredients that can increase its potential toxicity. It is also contaminated with nitrosoamines (known carcinogens) in small amounts, and is an animal oncogen. As all pesticides do, it can and will drift from the site of application to the surrounding neighborhood. Such drift can potentially harm those with asthma, hyperreactive airways, allergies, and chemical sensitivities. Drift also poses a risk to those with compromised immune systems, including cancer survivors.

The response to parents requesting that their children not be exposed involuntarily to toxic pesticides in any amount, is usually that the pesticide is registered for use by the EPA (Environmental Protection Agency) and is used strictly in conformity with label directions. I have been working with pesticide exposed populations for more than 30 years, and know of many instances where adverse human health effects have occurred in workers and communities (including children) when all label directions were followed

Since children are more susceptible to toxic exposures than adults because of their larger skin surface for their size, a more rapid respiratory rate, and less mature immune and detoxiifcation systems, we know they require greater protections.

I am asking that you support the parents and residents in Albany in their request to the University to adopt nontoxic weed control measures on the Gil Tract. There are a variety of effective alternative methods including hand weeding, mulches, cover crops, steam treatment, and others, used throughout California by school districts, municipalities and farmers committed to safe and sustainable weed control.

Sincerely,

Marion Moses, M.D.
Director

Enclosure: Summary of Testimony on Human Health Risks of Pesticides

Albany Coalition for Environmental Health
1200 Nielson Street, B
Berkeley, CA **94706**

5 10 52743717 • Dorothea Dorenz, Chairperson

Marilyn Garrett
351 Redwood Hts. Road
Aptos, CA **95003**

April 7, 2000

Dear Marilyn,

Thank you very much for the materials you sent to me about roundup and pesticides in schools. I have enclosed some of our materials. We are still negotiating with UCB about pesticide use on the field adjacent to our children's school. They are offering to use an alternate chemical pesticide. We are restating our conviction that a nontoxic alternative is a completely viable option.

With best regards,

Ellen Toomey

Pesticide Watch Education Fund

The Crop Duster

Spreading the News, Not the Poison

Summer1998

Letter from the Director

Welcome to the newly improved Crop *Duster,* Pesticide Watch Education Fund's publication for pesticide activists in California and throughout the nation.

This newsletter is designed to tell the stories from the trenches of California's pesticide wars, in the words of those people leading the fights in local communities. So many individuals and groups are taking courageous stands against growers who continue to use hazardous pesticides near schools and homes, government agencies who pollute our forests and right-of-ways with herbicides, and school officials who allow children to be exposed to pesticides.

If you are fighting one of these battles, please submit your story so that we can include it in future editions. These stories provide the energy we need as a movement to continue in our fight.

Look for an important addition to the Crop Duster *in* its next issue: *Urban **Solutions.*** This resource will be dedicated to discussing issues on the cutting edge of non-toxic pest control in the urban and suburban environment.

If you have particular urban issues that you want us to focus on, please let us know. We're anxious to provide you with the most effective tools to combat pests and the bureaucracy of city government and pest control companies alike, so let us know what you want to see.

I hope that you enjoy our improved publication. Please send us your stories and suggestions!

Gregg Small

Gregg Small
Executive Director

First Person

Janine Matelko, Fontana CA

Dear Readers,

I live in Fontana, a town of 100,000 in San Bemardio county, California. My 16 year-old daughter, Chrissy, died on June 30, 1997. The more I learn about pesticide poisoning, the more I am convinced that my daughter exhibited classic symptoms of organophosphate poisoning up until her last day. I would like to share her story with you all, to continue to bring attention to the seriousness of pesticide poisoning, and to strengthen efforts that would ban the use of high hazard pesticides.

Let me provide some context for Chrissy's story by explaining the unique circumstances that have led to extensive pesticide use in Fontana. In the early 1900s, developers lured people to Fontana with the profitable prospect of growing citrus. While newly planted citrus groves were taking root, newcomers were encouraged to take up chicken ranching to supplement their income. These chicken ranches are still in business today, and continue to generate huge fly infestations. Subsequently, the county, the city and the schools have all applied pesticides in Fontana to keep a lid on the flies. Until the early 1990's, schools even installed wall-mounted pesticide dispensers that released pyrethrins into the classrooms, while school was in session, every 15 minutes!

I first questioned Chrissy's health in the summer of 1993, when she experienced a seizure as she rounded the bases at softball practice at Village Park in Fontana. She experienced a seizure which lasted less than a minute. Tests at the hospital showed no problems, and the neurologist who examined her diagnosed her with heat stroke.

But an event the following year alerted us that something was terribly wrong with Chrissy.

Due to a severe fly problem in the spring of 1994, the city sent trucks through our neighborhood, spraying what they assured us were "natural" flower based chemicals to curb the problem.

I started getting calls from the school nurse at the middle school Chrissy attended. She was experiencing frequent headaches, nausea, and dizziness in class. Then one day, she stopped breathing and was rushed to the emergency room. I suspected that she was having a reaction to the sprayings, but the school district assured me no chemicals were being used in her classroom.

The same neurologist who previously diagnosed her *with* heatstroke rediagnosed her with epilepsy. He also suspected low blood sugar levels, a condition known as hypoglycemia.

(See Garavito, pg. 3)

aravito...

Anti-seizure medication and sugar packs were perscribed, but her attacks continued. In 1995, I insisted that the hospital run tests to get to the bottom of these attacks, but was not infomed when her EKG showed Prolonged QT, a symptom of organophosphate poisoning.

The spraying of our neighborhood continued. So did Chrissy's attacks.

In Septem ber 1996, chlissy started high school and was elected student-body president. She made her high-school softball team and the cheerleading squad. Until June, all seemed well.

On June 7, 1997, Chrissy returned to the site of her first episode, the Village Park in Fontana, for softball practice. As before, she was rounding the bases when the attack came on. Chrissy apparently realized what was happening, and lay down on the field. Suddenly, she suffered a heart arrhythmia, and stopped breathing. My daughter never regained consciousness, and was taken off life support 6 days later.

Soon after her death, I learned that Chrissy's middle school classroom had indeed been sprayed with pesticides while she was a student there. I also discovered that the city had allowed our neighborhood to be sprayed by truck 22 times in the months before Chrissy's death.

I also learned that two other girls in our community had died within the previous two years in the same way Chrissy had.

I have studied pesticides extensively since Chrissy's death, and concluded that she exhibited classic symptoms of organophosphate poisoning; nausea, dizziness, headaches, EKG's showing Prolonged QT, hyperglycemia, and death.

Chrissy loved school, sports, and wanted to be a pediatric doctor one day, She respected the government, her teachers, and the doctors who treated her. Yet everywhere we went for help — the city, the schools, the hospitals — failed her.

Although the Fontana School District started an IPM program, I recently heard from a school district employee that the schools are still frequently sprayed with pesticides. The city parks the same; the public has been told that sprayings have stopped, but an applicator who services the parks assures us spraying continues.

While the city does nothing, I have been labeled crazy, emotional, and responsible for all the bad press my daughter's death has brought Fontana. My question is this: why are we appalled at chemical warfare in other countries, when we permit it in our own backyard?

Again, thank you for permitting me to share this with those of you who have been there, and fight to make this a better world and a safer place to live, free of dangerous chemicals.

Update: AB 1948

Corporate special interests, led by the Western Crop Protection Association, led a furious lobbying campaign that successfully watered down AB 1948, the School Pesticide Use Reduction and Right-to-Know Act.

The bill, introduced by Assemblyman Kevin Shelley (D-SF) featured a provision to ban the use of highly hazardous pesticides from school grounds, including those identified by various government agencies as linked to cancer, reproductive harm or acutely toxic.

The bill was supported by a broad coalition, including Pesticide Watch, CALPIRG and the PTA. A strong grassroots campaign, which included letter-writing and meetings with key legislators, was also waged in support of the bill.

Despite the fact that 87% of surveyed school districts reported using hazardous pesticides, industry lobbyists successfully mananged to gut the bill of its Ban the Worst provision. Strong grassroots support and the efforts of Assemblyman Shelley kept the bill alive, and it passed out of the Assembly, albeit in a significantly watered down form.

The bill now features a number of important provisions that will increase the public's right-to-know when pesticides are used in schools, including annual written notification to parents of chemicals that may be applied to school grounds, and a provision requiring commercial applicators to report pesticide use by school site.

While this bill still merits support as it moves to the state Senate for a vote in early July, these events again demonstrate the power of corporate special interests over our state elected officials. Sadly, this common-sense bill. that would have protected our children from the most hazardous pesticides, could not pass through a legislature that is beholden to special interests.

Toxicological Profiles

0449

Product: ROUNDUP
Active ingredient: **GLYPHOSATE 41%**
Other ingredients: 59% includes: polyethoxethyleneamine (POEA) and isopropylamine (amount undisclosed); identity of remaining ingredients withheld by manufacture as trade secrets.
Type: HERBICIDE (Systemic)
Mode of Action: Inhibits enzymatic activity of a process specific to plants; other enzyme systems in plants and animals are also affected by glyphosate. (Heitanen 1983)

Of pesticides used during 1994, glyphosate was #7 for overall total pounds of active ingredient applied in California. Of the total. glyphosate used in the state, 10% was used in grape production, yet grapes were. the number one crop associated with glyphosate- related illnesses from 1984 to 1990 (Pease 1993).

Toxicology

In California agriculture, Roundup's active ingredient, glyphosate, ranked 3rd for reported pesticide related skin and eye acute **illnesses,** 15th for reported **systemic and respiratory acute illnesses** and 3rd for reported pesticide related acute illnesses of any kind from 1984 to 1990. It was ranked 8th in acute illnesses per million pounds applied (ibid).

Roundupinhibits **enzymes** involved **in the** detoxification **of** chemicals **in the body.** Test animals exposed to glyphosate showed depressed function of cytochrome P450 and two other enzymes which are vital to the body's processing of toxicants (Heitanen 1983). At least two enzymatic steps are involved in the processing oftoxicants in the liver ofhumans; the first involves cytochrome P450 enzymes and the second involves glutathione S tranferases (GSTs). People who do not. possess certain GSTs due to genetic variation (estimated at approximately 50% of the Caucasian population; others unknown), may have a greater risk of some types of cancer (Perera 1996).

U.S. EPA recently reclassified glyphosate as a Group E chemical, meaning that evidence exists that the compound is not a human carcinogen. Yet studies submitted to the California Department of Pesticide Regulation indicate **possible adverse cancer effects,** with rare tumor formation in the kidneys and adrenal cortex of test animals. Other studies found an increase of testicular tumors, thyroid cancer in females, and a rare kidney tumor (U.S.EPA 1982;1983;1985;1991).

Metabolites and breakdown products of glyphosate include the known carcinogen formaldehyde (Lund 1986). Formaldehyde is listed as a **carcinogen** by California's Office of Environmental Health Hazard Assessment under Proposition 65. It also causes gene **mutations** and is a **reproductive toxicant** (MBTOC 1995).

N- nitrosoglyphosate, a contaminant of glyphosate, is a member of a chemical family of which approximately 75% are known carcinogens (Lijinsky 1974; Sittig 1980).

Glyphosate is a **severe eye irritant.** Symptoms of exposure include eye and **skin irritation,** which is sometimes severe and can persist for months (Temple and Smith 1992).

A study of humans documented a greater incidence of impaired lung function, throat irritation, coughing and breathlessness in workers exposed to dust of flax treated with Roundup, as compared to those exposed to untreated flax dust (Jamison 1986).

A low dose exposure study in experimental animals demonstrated salivary gland abnormalities related to changes in adrenalin levels. Changes were also observed in the kidney, liver, and thymus (U.S. Department of Health and Human Services).

An unknown percentage of Roundup's formulation is composed of polyethoxethyleneamine (POEA), a surfactant added to enhance the performance of glyphosate. POEA is **three times as acutely toxic as** glyphosate (Sawada 1988), is irritating to eyes and skin, and causes gastrointestinal problems (Monsanto 1992). POEA is contaminated by 1,4 dioxane during the manufacturing process (NCAP 1990). U.S.EPA regards 1.4 dioxane as a **probable human carcinogen.** California's Office of Environmental Health Hazard Assessment recognizes 1,4 dioxane as a carcinogen under Proposition 65.

Jn animal tests, a mixture of glyphosate and POEA caused cardiac arrest (UNEP/WHO/ILO 1994). The amount of Roundup-which is a combination of glyphosate and POEA — required to kill rats is about 1/3 of a lethal dose of either compound applied separately (Martinez 1990, 1991), suggesting that **synergism** of the two chemicals may enhance toxicity.

Another portion of Roundup's formula is composed of isopropylamine, a neutralizing agent. It is extremely **destructive to tissue of the mucous membranes and upper respiratory tract** (Sigma Chemical 1994).

Environmental Fate and 'Effects

Glyphosate is a candidate for evaluation **as a toxic air contaminant** by the California Department of Pesticide Regulation. Formaldehyde, one of glyphosate's breakdown products, is listed as a toxic air contaminant. (DPR 1994)

Between 14% and 78% ofglyphosate applied as a ground spray drifts off site (Freedman 1990, 1991). It has been documented to affect plants as far as 131 feet away, and residues have been detected 1,312 feet downwind (Marrs 1993; Yates 1978).

Glyphosate is highly persistent in soil, taking from 24 to 249 days for one-half of it to transform or biodegrade (Lappe 1996).

Glyphosate has been found in **surface water as** the result of agricultural run-off (Frank 1990; Edwards 1980) and **in ground water** (U.S.EPA 1992).

Roundup is **highly toxic to fish and aquatic organisms** (Product label). Juvenile fish are particularly sensitive to the toxic effects of Roundup. Physical and chemical factors such-as temperature, pH and solute concentration in aquatic ecosystems influence the acute toxicity of glyphosate to aquatic organisms (Caltrans 1991).

Glyphosate **was** shown in one study **toiohibit the growth of mycorrhizal fungi,** organisms which are essential to ecosystems and enhance plant survival (Sidhu 1990).

Acute toxicity to mammals, birds, and bees is low, but no information is available regarding long term effects of glyphosate to these organisms. No data is available regarding the toxicity of glyphosate to soil invertebrates, reptiles or amphibians (Caltrans 1991).

Fraud and Profit

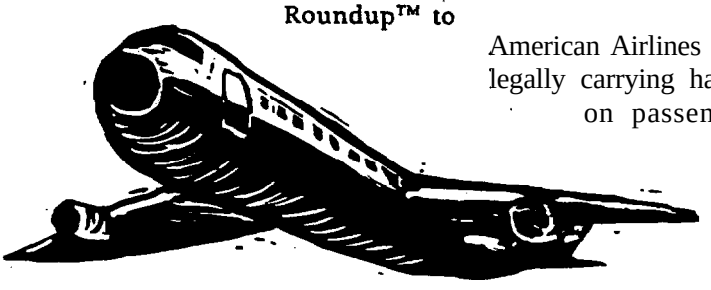
Laboratories contracted by the manufacturer to conduct toxicological analysis on glyphosate have twice been documented **as falsifying data** for these tests (U.S. Congress 1984; EPA 1994).

Public perception of Roundup has largely been shaped by high profile advertising campaigns of its manufacturer, Monsanto, which has a high economic stake in its continued use. According to The Wall Street Journal (1/2/96), Roundup accounts for one half of Monsanto's earnings. Monsanto advertises that Roundup can be used, "where pets and kids play" and that it, "breaks down into natural materials when its work is done." But in 1996 the New York Attorney General fined Monsanto $50,000 for these **false** claims and extracted a promise from Monsanto to never again advertise in the state that Roundup is safe.

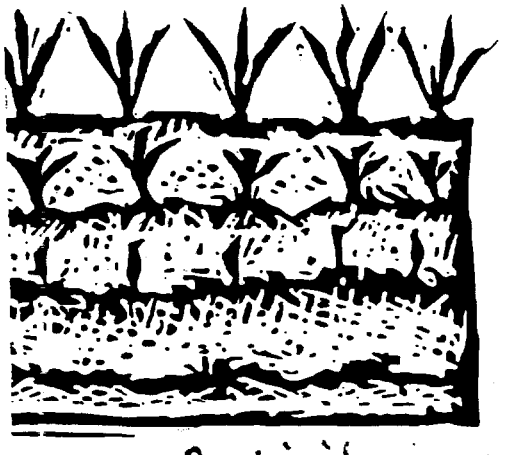
U.S. "There is a potential hazard that it [the toxin] builds up and could enhance the selection of resistant target organisms and could possibly affect non-target organisms," said Stotzky in an interview with Renters. Past studies have already shown that Bt corn pollen drifting to milkweed can harm Monarch butterflies that feed on the plant. Now, according to this study, non-target organisms in the soil may be harmed as well. Stotzky has called for more studies to determine the impact of the toxin's build up in the soil on insects and other organisms. "Those studies need to be done. They should have been done a long time ago before the regulatory agencies allowed the release of these plants," he said. Because the consequences of an extended life of Bt in soil are unknown, Stotzky said, "We should stop at this point and consider these things." Beyond Pesticides/NCAMP agrees.

Studies Link Glyphosate to Cancer

What goes around comes around. Another Roundup™ story. After analyzing various studies linking the popular herbicide Roundup" (glyphosate) , manufactured by Monsanto, to cancer in laboratory animals, EPA originally listed the pesticide as a "Group D" carcinogen, finding carcinogenicity "inconclusive." In 1991, EPA changed this labeling and listed the pesticide as 'Group E" or non-carcinogenic. Now, recent'studies are again showing the chemical's connection to cancer. In A Case Control *Study of Non*-Hodgkin's Lymphoma and Exposure to Pesticides (Cancer, March 15, 1999, Vol. 85, No. 6), Swedish scientists Lennart Hardell and Mikael Eriksson connect Roundup™ to non-Hodgkin's lymphoma (NHL). According to the study, exposure to this herbicide increases the risk of this cancer by a factor of three. NHL has increased by 80% in the world since the early 1970s, and is one of the most rapidly increasing types of cancer in the western world, according to the American Cancer Society. Glyphosate use is expected to increase both here and abroad, especially with the continued use of 'Roundup-Ready" crops, also manufactured by Monsanto. 1997 USDA statistics show that expanded planting of Roundup-Ready soybeans have resulted in a 72% increase in the use of glyphosate.



In another important study, *P-Post*-labeling Detection *of DNA Adducts in* Mice *Treated With the* Herbicide *Roundup*, scientists in Genoa, Italy found that the product Roundup™ is mutagenic, but that the active ingredient, glyphosate. is not the mutagenic factor. In other words, scientists determined that one or more of the product's inert ingredients are causing the problem. In a yet to be released study on glyphosate, produced by the German government as part of an extensive review process to determine what pesticides will be allowed for use in the European Union (EU), beneficial insects were found to be harmed by glyphosate. The scientists are calling for further study of glyphosate. Send $5 *to Beyond Pesticides/NCAMP for* copies of these studies *and* related current studies on *glyphosate*.



American Airline Violates Law Restricting Dange Chemicals on Flig

American Airlines has adm legally carrying hazardous on passenger flig settleme line has pay $8 This is ever gu a major rier in nal hazardous waste according to *USA Today* (D ber 17, 1999). In 1997, the gicide Dowicide™ (sod ortho-phenylphenate), w has since been discontinu Dow Chemical, was spilled being loaded on to a passen at Miami International Airp ter breathing the fumes, pas were evacuated. An inves following this incident unc 1995 spill of the chemical D and a subsequent fire at the port. Dioxital™ is highly f and can explode when e heat. The chemical had be illegally from Mexico to M an American jet and inste disposed of after the fire, i the airport for more than according to USA Today. T was only "one of a series American. In other cases, ployees transported carc finding out what they co mishandled cargo even t knew it carried hazardou American was charged w federal regulations from 1 1999 by carrying flammab and poisonous chemicals i carriers. American must pi to the Miami-Dade Fire D hazardous materials divi

◆ *Aren't household pesticides tested to make sure they are safe?*

Many people assume the pesticides they personally buy, or those used by exterminators and lawn care companies to control insects, weeds, and other pests inside and outside their homes, are "safe".

They assume the government is protecting them: that pesticides are scientifically tested and wouldn't be on the market if they weren't "safe". None of these assumptions is correct.

Many pesticides widely used for home pest control are known or suspected to cause cancer, birth defects, reproductive, genetic, and brain damage in laboratory animals.

Tbe consumer has no way of knowing about these chronic effects since the law does not require this information to be on the label.

Studies show that pesticide exposure is related to cancer in humans -- both children and adults. The types of cancer found most often include non-Hodgkin lymphoma, leukemia, and brain cancer. Pesticides have also been linked to breast cancer.

The Environmental Protection Agency (EPA) regulates home pesticides based only on acute poisoning. There are no regulations based on potential long-term, or chronic effects.

The EPA does not require any scientific studies of potential adverse health and environmental effects from using home pesticides according to label directions.

◆ *What is the first step in selecting home pesticide products and services?*

The most important thing is to avoid pesticides that are packaged in a hazardous way, and select those packaged in the safest way.

Foggers and aerosols: The most hazardous products are foggers and aerosols. We recommend that you never buy or use them. Nor should you allow an exterminator to use a fogger, bomb, or aerosol inside or outside your home.

Foggers and aerosols emit vapors, mists, and tiny particles that are readily absorbed into the human body. Their residues contaminate everything they contact and can spread or drift beyond the treated area.

Contaminated floors, carpets, drapes, upholstery, furniture, and other objects can become sources of continuing pesticide exposure for weeks, months, or even years -- especially to children.

Inert ingredients: Foggers and aerosols also contain a high percentage of "inert" ingredients (called inert because they are not active as pesticides). The law does not require the names of inert ingredients to be on the label.

So called inert ingredients can be more toxic than the pesticide itself, or make the product more toxic by their presence. Inert ingredients added to increase pest kill make the product more harmful to humans as well.

Baits: The best kind of pesticides to buy are baits. Baits do not control pests by making the entire treated area toxic. The pesticide stays in the original container. It leaves only with the pest taking the bait back to the colony, nest, or other living quarters they have set up in your house or yard.

Baits do not give off harmful vapors, mists, sprays, or residues that contaminate the entire area being treated. We highly recommend that baits be used whenever possible.

◆ *What about liquid sprays?*

While liquid pesticides are potentially less hazardous than foggers and aerosols, they can pose an even greater problem because of the way they are used. They account for the largest volume of home use pesticides. Liquid pesticides are widely used outdoors as broadcast sprays, especially for lawn care.

This results in widespread contamination of the environment from residues drifting away from the site of application. Estimates are that 85 to 90% of broadcast spray pesticides drift off target and never reach the intended pest.

The drifting residues pose a threat to surrounding neighbors and community residents. The most vulnerable are children, pregnant women, and those with asthma, allergies, and chemical sensitivities, as well as the elderly, and the ill. Exposure to pesticide drift can also aggravate existing medical conditions.

Pesticide drift is also a hazard to birds, bees, fish, and wildlife. Pesticide residues on vegetation and in soil contaminate the interior of the home when tracked inside. The residues also contaminate ground and surface water from run-off, leaching, and rain.

Another problem with liquid sprays is that professional strength concentrated products and application equipment are increasingly being sold to households. Concentrated products are more toxic because the percentage of active ingredient pesticide is much higher.

Other hazards are mixing and applying them, a greater potential for misuse, and problems with disposal and storage of the unused portion.

◆ *What is another important step in selecting home pesticide products and services?*

It is important to avoid pesticide chemicals that are the most hazardous to your health, and select those that are not.

However, it is important to remember that there are two kids of adverse health effects from pesticides -- acute (short-term), and chronic (long term).

Acute versus chronic toxicity: Just because a pesticide does not immediately poison you, cause a rash, or otherwise make you ill, does not mean that exposure to the pesticide is not harmful to your health.

Exterminators and lawn care companies often tell their customers not to worry -- that the pesticides they use are "safe". What they usually mean is that exposure is not likely to send you off to your local emergency room because of acute poisoning.

Most exterminators and lawn care company personnel know little or nothing about chronic effects of pesticides they apply to your property. This information is not on the pesticide label. Pest control operators are not required to learn about chronic effects to pass the certification examination for their pest control license.

If you come across a professional pest control operator who knows anything about a pesticide's potential to cause cancer, birth defects, brain damage, or other chronic effects, and shares this information with you, please let us know

Chronic effects information is also not required to be on the label of pesticides you

personally buy for use in your home, lawn, or on your pets.

◆ *Where can I find chronic effects information on home use pesticides?*

This information is now available in a book written by Dr. Marion Moses: *Designer Poisons: How to Protect Your Health and Home from Toxic Pesticides.*

Tables in the book list chronic effects for hundreds of brand name pesticides sold over-the-counter and used by exterminators and lawn care companies -- based on surveys done in San Francisco, California and Sarasota, Florida. (See back page for how to order Designer *Poisons.)*

◆ *What are the most hazardous pesticides, and safer alternatives?*

Insecticides: Most of the widely used insecticides are toxic to the nervous system. They include the nerve-gas type organophosphates (Dursban®, Orthene®, diazinon, malathion); the nerve-gas type carbamates: (Sevin®, propoxur, carbofuran, Ficam®); the synthetic pyrethroids (allethrin, cyfluthrm, permethrin, resmethrin); and the DDT family type (lindane, Kelthane®, thiodan, methoxychlor).

We recommend against the use of any of these types and classes of pesticides. They are not only a health hazard, but make your home and lawn toxic, requiring continuing toxic inputs to maintain since they are ecologically so destructive.

Safer alternatives: boric acid, diatomaceous earth (not swimming pool type), insecticidal soaps, B.T., beneficial nematodes, neem, vacuuming, and organic lawn care.

Herbicides: We recommend against the use of any liquid broadcast spray herbicide. Most of the herbicides widely used, including Roundup, 2,4-D, atrazine, and others, cause tumors, cancer, birth defects, and chronic effects in laboratory animals. They pose other public health problems from involuntary drift exposures to community residents.

Safer alternatives: hot water, vinegar, mowing, weed wackers, organic lawn care and gardening.

Fungicides: Many fungicides cause cancer and/or birth defects in laboratory animals including: Daconil®, captan, Benlate®, maneb, mancozeb, Dyrene®, PCNB, Bayleton ®.

Safer alternatives: sulfur, baking soda, some copper compounds, organic lawn care and gardening.

Fumigants: These toxic pesticides in the form of a gas should never be used and include: methyl bromide, Vikane®, DDVP (pest strips), and para-dichlorobenzene (mothballs, toilet bowl deodorizers, room fresheners).

Safer alternatives: There is a heat method that is completely nontoxic for drywood termites that should be used instead of methyl bromide or Vikane®. There are many deodorizers and fresheners that do not contain para-dichlorobenzene .

The information in this brochure is from the hook *Designer Poisons: How to Protect Your Health and Home from Toxic Pesticides,* by Marion Moses, M.D.. It tells you how to control cockroaches, fleas, fire ants, termites, weeds, and other pests without harming yourself, your family, your pets, or the environment.

How to Order Designer Poisons

(All orders must be prepaid)

Toll Free: 800-PEC-FREE (732-3733).
VISA or MasterCard only.

Send check or money order for $24.95 ($19.95 + $5 shipping'). *In California, add appropriate sales tax.* Payable to:

Pesticide Education Center,
P.O. Box 420870
San Francisco, CA 94142-0870
415-391-8511 Fax: 415-391-9159
e-mail: pec@pesticides.org
http://www.pesticides.org/pesticides

* Shipping: $5 first copy, $3 each additional copy

Pesticide Education Center

For a safe environment for workers and consumers

Consumer Pesticide Safety Series

#1

General Information

By Marion Moses, M.D.

Rachel's Environment & Health Weekly #660

Providing news and resources for environmental justice -- July 22, 1999

PESTICIDES IN THE NEWS

Pesticides continue to produce unpleasant surprises around the world.

** In April, researchers in Switzerland announced that much of the rain falling on Europe contains such high levels of pesticides that rainwater would be illegal if it were supplied as drinking water.' Rain over Europe is laced *with* atrazine, alochlor and other common agricultural poisons sprayed onto crops.

The European Union has set a drinking water standard of 100 nanograms per liter for any individual pesticide. Stephan Müller at the Swiss federal Institute for Environmental Science and. Technology in 'Dubendorf reported finding one sample of rain containing 4000 nanograms per liter of 2,4-dinitrophenol, a common pesticide (not to be confused with the weed killer 2,4-D).

Müller had previously studied samples of rain from 4 1 storms over Europe and found Atrazine at levels exceeding 100 nanograms per liter in 9 of *them*. A 1999 study of rainfall in Greece found one or more pesticides in 90% of 205 samples taken. Atrazine was measurable in 30% of the 205 samples.'

Atrazine is a weed killer used on 96% of the U.S. corn crop each year. Introduced in 1958, some 68 to 73 million pounds were used in the U.S. in 1995, making it the best-selling pesticide in the nation. Atrazine interferes with the hormone systems of mammals. In female rats, it causes tumors of the mammary glands, uterus, and ovaries. Two studies have suggested that it causes ovarian cancer in humans. EPA [U.S. Environmental Protection Agency] categorizes it as a "possible human carcinogen." Atrazine is found in much of the drinking water in the midwestem U.S., and it is measurable in corn, milk, beef and other foods. (See REHW *#553.*)

** Last March, well-known Swedish scientists Lennart Hardell and Mikael Eriksson published a case-control study (404 cases and 741 controls) showing once again that non-Hodgkin's lymphoma (NHL) is linked to pesticide exposures. Hardell and Eriksson published their first study linking phenoxy herbicides to non-Hodgkin's lymphoma (NHL) in 1981.[3]

Non-Hodgkin's lymphoma (NHL) is a group of cancers that arise in the white blood cells. NHL is increasing rapidly in the U.S. and elsewhere in the industrialized world.

Between 1973 and 199 1, the incidence of non-Hodgkin's lymphoma increased at the rate of 3.3% per year in the U.S., making it the third fastest-growing cancer (after prostate cancer, growing at 3.9% per year, and melanoma of the skin, also growing at 3.9% per year).[4] In Sweden, the incidence of NHL has increased at the rate of 3.6% per year in men and 2.9% per year in women since 1958.

In recent years, AIDS patients have contributed to the increase in NHL, but a steady rise in the incidence of this disease was apparent long before the AIDS epidemic. Together the known "risk factors" for NHL --including immune-suppressing drugs, rare immune-system diseases, and AIDS, explain only a small proportion of NHL cases.

One of the herbicides linked to NHL by the most recent Hardell study is glyphosate, sold by Monsanto under the trade name Roundup. A previous study of human subjects in 1998 had implicated Roundup in hairy cell leukemia (cancer of the blood-forming organs), a rare kind of NHL.[5] Several animal studies have shown that Roundup can cause gene mutations and chromosomal aberrations.[3]

The use of Roundup is expected to increase substantially in the next few years because several of Monsanto's genetically engineered crops (such as potatoes and corn) are "Roundup Ready" which means they have been specifically designed to withstand a thorough dousing by Roundup. The goal is to create crops that are not affected by Roundup so that unusually large quantities of Roundup can be applied to eradicate weeds without harming the crop Roundup is Monsanto's most profitable product. (See *REHW #637, #638, #639.*)

** Last month, researchers in the U.S. and Canada announced that they had measured pesticides in the amniotic fluid of 30% of a sample of 9 pregnant women in Los Angeles, California.4 A baby growing in the womb floats in amniotic fluid for 9 months before birth.

The particular pesticide found in amniotic fluid -- p,p'-DDE -- is a breakdown byproduct of DDT and is known to interfere with male sexual development by deactivating the male sex hormone, testosterone. Until now, pesticides had not been measured in amniotic fluid.

The unpublished study of pesticides in amniotic fluid was reported at the 8 1st annual meeting of the Endocrine Society in San Diego, California, in June.6 T'he researchers released a statement in San Diego saying, "The concentrations of p,p'-DDE found (range of 0.01 to 0.63 nanograms per milliliter [parts per billion]) are sufficient to cause concern, since the levels measured are in the same range as some steroids [hormones] which occur naturally in the fetus at the same time of development." The statement also said, "Of the various health problems associated with these chemicals, developmental abnormalities of the male reproductive tract, suppression of immune function, development of me brain and neurobehavioral probiems in children are of major concern because they are potentially avoidable and irreversible."

One of the authors of the study, Siu Chan of the University of Calgary in Canada, told New *Scientist* magazine that researchers cannot be sure that DDE would have any affect on babies exposed continuously in the womb.' But Chan pointed out that alligators were harmed by exposure to a similar chemical in Florida after a chemical spill. "In males, the penis was much smaller than normal," Chan said. (See *REHW #372.*) Several studies of laboratory animals have confirmed that DDE can interfere with normal sexual development of males and can cause enlarged prostate glands.[8,9]

** A study published in May in *Environmental Health Perspectives,* a U.S. government science journal, makes the case that insecticides sprayed on forests in eastern Canada in the mid- 1970s led to a dramatic decline in the population of Atlantic Salmon (45% reduction in small salmon, 77% reduction in large salmon)." Salmon are born in fresh water but after 2 or 3 years they undergo physical changes

called "smoltification," after which they move downstream into salt water. Smoltification is controlled by hormones. Researchers believe the pesticide interfered with the hormones of the salmon, somehow disrupting smoltification, leading to the loss of large numbers of fish.

The pesticide in question was called Matacil 1.8D. The "active ingredient" in Matacil 1.8D is aminocarb, which makes up about 25% of the insecticide by weight. The other 75% of Matacil 1.8D is an "inert ingredient" called 4-nonylphenol (4-NP for short). In laboratory tests, 4-NP is anything but inert. It is a powerful hormone disupter.

The authors of the study point out that many U.S. streams contain levels of hormone-disrupting chemicals comparable to the levels that they believe wiped out so many Atlantic salmon. (See *REHW #545.*)

** Consumer's Union, publisher of *Consumer Reports* magazine announced last February that many U.S. fruits anti vegetables carry pesticide residues that exceed the limits that EPA considers safe for children. "Using U.S. Department of Agriculture statistics based on 27,000 food samples from 1994 to 1997, the magazine looked at foods children are most likely to eat," *the New York Times* reported." "Almost all the foods tested for pesticide residues were within legal limits, but were frequently well above the levels the Environmental Protection Agency says are safe for young children. According to the Consumer's Union Report, even one serving of some fruits and vegetables can exceed safe daily limits for young children," the *Times* reported.

"Methyl parathion accounts for most of the total toxicity on the foods that were analyzed, particularly peaches, frozen and canned green beans, pears and apples. Late last year [EPA] said that methyl parathion posed an 'unacceptable risk' but that it had not taken any action to ban it or reduce its use. Organophosphates [such as methyl parathion] are neurological poisons and work the same on humans *as they* do on insects," *the Times* said.

One of the main aims of *the Consumer Reports* study was to compare pesticide levels on U.S.-grown foods vs. imported foods. In almost every case imported foods had lower levels of pesticides and/or less toxic pesticides than U.S.-grown foods.

In sum, many of us are being exposed -- without our informed consent -- to industrial poisons starting in me womb, then in our food and water more or less continuously throughout childhood and into adulthood. Wildlife are being continuously exposed as well. Many of these substances interfere with mental and sexual development and can cause learning disorders and violent behavior. (See REHW *#529, #551*, and *#648.*) Science has no way of assessing what effects combinations of these poisons will have.

Yet risk assessors working for the poisoners, and their apologists in government, make a good living manipulating mathematical models to "prove" that all of this is acceptably safe. They are the conductors keeping the trains running on time to Auschwitz, just doing their jobs.

But of course the owners of the trains are the industrial poisoners and the political representatives they own.

It boils down to this: we must get private money out of our elections so that we can choose political representatives who are not in the pockets of the poisoners. Until that happens, the poisoning will continue.

[I] Fred Pearce and Debora Mackenzie, "It's raining pesticides; The water falling from our skies is unfit to drink," New *Scientist* April 3, 1999, pg. 23. See www.newscientist.com/ns/19990403/newsstory12.html.

[2] Emmanouil Charizopoulos and Euphemia Papadopoulou-Mourkidoy "Occurrence of Pesticides in Ram of the Axios River Basin, Greece," *Environmental Science & Technology* [ES&T] Vol. 33, No. 14 (July 15, 1999), pgs. 2363-2368.

[3] Lennart Hardell and Mikael Eriksson, "A Case-Control Study of Non-Hodgkin Lymphoma and Exposure to Pesticides," Cancer Vol. 85, No. 6 (March 15, 1999), pgs. 1353-1360.

[4] Angela Harms and others, editors, Cancer *Rates and Risks 4th Edition* [NIH Publication No. 96-691] (Bethesda, Maryland: National Cancer Institute, 1996), pg. 17.

[5] M. Nordstrom and others, "Occupational exposures, animal exposure, and smoking as risk factors for hairy cell leukaemia evaluated in a case-control study," *British Journal of Cancer* Vol. 77 (1998), pgs. 2048-2052.

[6] Warren Foster, Siu Chan, Lawrence Platt, and Claude Hughes, "[P3-357] In utero exposure of the human fetus to xenobiotic endocrine disrupting chemicals: Detection of organochlorine compounds in samples of second trimester human amniotic fluid [abstract presented June 14, 1999 at the Endocrine Society's 81st Annual Meeting in San Diego, California]." Available from The Endocrine Society, 4350 East West Highway, Suite 500, Bethesda, MD 20814-4426. See also, "P3-357 Lay explanation of abstract" also available *from* the Endocrine Society.

[7] Alison Motluk, "Bad for the Boys," New *Scientist* June 26, 1999, pg. 15.

[8] L. You and others, "Impaired male sexual development in perinatal Sprague-Dawley and Long-Evans hooded rats exposed in utero and lactationally to p,p'-DDE," *Toxicological Sciences [ISSN 1096-6080]* Vol. 45, No. 2 (October 1998), pgs. 162-173.

[9] I.K. Loeffler and R.E. Peterson, "Interactive effects of TCDD and p,p'-DDE on male reproductive tract development in in utero and lactationally *exposed rats," Toxicology and Applied Pharmacology* Vol. 154, No. 1 (January 1, 1999), pgs. 28-39.

[10] Wayne L. Fairchild and othen, "Does an Association between Pesticide Use and Subsequent Declines in Catch of Atlantic Salmon (*Salmo salar*) Represent a Case of Endocrine Disruption?" *Environmental Health* Perspectives Vol. 107, No. 5 (May 1999), pgs. 349-357.

[1 I] Marian Burros, "High Pesticide Levels Seen in U.S. Food," New York *Times* February 19, 1999, pg. unknown. See http://archives.nytimes.com.

Rachel's Environment & Health Weekly *(ISSN* 1078-103x) is published weekly by Environmental Research **Foundation at 612** Third Street - Suite 2A, Annapolis, MD 21403-3246. Second-Class Postage paid at Annapolis, MD. **POSTMASTER:** Send address changes to *RACHEL'S ENVIRONMENT & HEALTH WEEKLY,* P.O. Box 5036, Annapolis, MD 21403-7036. Peter Montague, editor (National Writers Union, UAW Local 198 I/AFL-CIO); Maria B. Pellerano, associate editor. FATES: $25 per year for individuals and citizen groups; $45 for universities and libraries; $80 for professionals and government agencies; $15 for students and seniors; 6400 for businesses; in Canada and Mexico, add $8.00; in all other countries. add $ 15.00. All payments in U.S. funds drawn on U.S. banks. Visa & Mastercard accepted. Telephone (410) 263-1584; fax: (410) 263-8944; E-mail: erf@rachel.org. *Rachel's Environment & Health Weekly* is not copyrighted. Printed on kenaf paper (100% acid-free, chlorine-free, and tree-free).

Rachel's Environment & Health Weekly
P.O. Box 5036
Annapolis, MD 2 1403-7036

SECOND CLASS

TO:

Rachel's Environment & Health Weekly #658

Providing news and resources for environmental justice -- July 8, 1999

PVC AND THE BREASTS OF MOTHERS

Wow! Last week the Science and Environmental Health Network (SEHN) brought us The *Precautionary Principle in Action: A Handbook,* and this week they bring us a full-length book just published by Island Press: *Protecting Public Health & The Environment: Implementing the Precautionary Principle.'* (To order the book from Island Press, telephone l-800-828-1302 -- well worth the $30 price.)

Carolyn Raffensperger, the North Dakota dynamo who powers SEHN, seems to be everywhere at once. Last week she traveled to the White House, invited to make a presentation about the precautionary principle. We take this as further evidence that American industry is in a panic over this new way of making environmental decisions. Perhaps they are hoping Al Gore can coopt and "cool out" these precautionary upstarts and get things back onto the risk assessment track where they belong. We suspect Mr. Gore -- who talks a good game but whose actions have proven him an untrustworthy friend of the environment -- will do his best to give chemical corporations what they want.

SEHN's new book-length anthology will satisfy anyone who wants to know the history of the precautionary principle, where it fits into environmental law, how it has developed in Europe, and how the principle can be applied in many different settings. SEHN's book is deep and rewarding, at once philosophical and factual, a thoroughly satisfying volume.

Best of all, there is a special reward at the end of the book -- a wonderful little essay by Sandra Steingraber, our favorite environmental writer (see *REHW #565*). Here, with permission from Island Press, is that essay verbatim:

Why the Precautionary Principle? A Meditation on Polyvinyl Chloride (PVC) and the Breasts of Mothers

by Sandra Steingraber[2]

Those of you who know me know that when I talk on these topics I usually speak out of two identities: biologist and cancer activist. My diagnosis with bladder cancer at age 20 makes more urgent my scientific research. Conversely, my Ph.D. in ecology informs my understanding of how and why I became a cancer patient in the first place: bladder cancer is considered a quintessential environmental disease. Links between environment and public health became the topic of my third book, *Living Downstream,* but since I have been given the task of speaking about the effect of toxic materials on future generations, I'm going to speak out of another one of my identities -- that of a mother.

I'm a very new mother. I gave birth in September 1998 to my daughter and first child. So, I'm going to speak very intimately and in the present tense. You know it's a very powerful thing for a person with a cancer history to have a child. It's a very long commitment for those of us unaccustomed to looking far into the future. My daughter's name is Faith.

I'm also learning what all parents must learn, which is a new kind of love. It's a love that's more than an emotion or a feeling. It's a deep physical craving like hunger or thirst. It's the realization that you would lay down your life for this eight-pound person without a second thought. You would pick up anns for them. You would empty your bank account. It's love without boundaries and were this kind of love directed at another adult, it would be considered totally inappropriate. A kind of fatal attraction. Maybe, when directed at babies, we should call this "natal attraction."

I say this to remind us all what is at stake, If we would die or kill for our children, wouldn't we do anything within our power to keep toxics out of their food supply? Especially if we knew, in fact, there were alternatives to these toxics?

Of all human food, breast milk is now the most contaminated. Because it is one rung up on the food chain higher than the foods we adults eat, the trace amounts of toxic residues carried into mothers' bodies become even more concentrated in the milk their breasts produce. To be specific, it's about 10 to 100 times more contaminated with dioxins than the next highest level of stuff on the human food chain, which are animal-derived fats in dairy, meat, eggs, and fish. This is why a breast-fed infant receives its so-called "safe" lifetime limit of dioxin in the first six months of drinking breast milk. Study after study also shows that the concentration of carcinogens in human breast milk declines steadily as nursing continues. Thus the protective effect of breast feeding on the mother appears to be a direct result of downloading a lifelong burden of carcinogens from her breasts into the tiny body of her infant.

When it comes to the production, use, and disposal of PVC [polyvinyl chloride plastic], the breasts of breast-feeding mothers are the tailpipe. Representatives from the vinyl industry emphasize how common a material PVC is. and they are correct. It is found in medical products, toys, food packaging, and vinyl siding. What they don't say is that sooner or later all of these products are tossed into the trash, and here in New England, we tend to shovel our trash into incinerators. Incinerators are de facto laboratories for dioxin manufacture, and PVC is the main ingredient in this process. The dioxin created by the burning of PVC drifts from the stacks of these incinerators, attaches to dust particles in the atmosphere, and eventually sifts down to Earth as either dry deposition or in rain drops. This deposition then coats crops and other plants, which are eaten by cows, chickens, and hogs. Or, alternatively, it's rained into rivers and lakes and insinuates itself into the flesh of fish. As a breast-feeding mother, I take these molecules into my body and distill them in my breast tissue. This is done through a process through which fat globules from throughout my whole body are mobilized and carried into the breast lobes, where, under the direction of a pituitary hormone called prolactin, they are made into human milk, Then, under the direction of another pituitary hormone called oxytocin, this milk springs from the grape-like lobes and flows down long tubules in the

nipple, which is a kind of sieve, and into the back of the throat of the breast-feeding infant. My daughter.

So, this, then, is the connection. This milk, my milk, contains dioxins from old vinyl siding, discarded window blinds, junked toys, and used I.V. bags. Plastic parts of buildings that were burned down accidentally are also housed in my breasts. These are indisputable facts. They are facts that we scientists are not arguing about. What we do spend a lot of time debating is what exactly are the health effects on the generation of children that my daughter belongs to. We don't know with certainty because these kids have not reached the age at which a lot of diseases possibly linked to dioxin exposure would manifest themselves. Unlike mice and rats, we have long generational times. We do know with certainty that childhood cancers are on the rise, and indeed they are rising faster than adult cancers. We don't have any official explanation for that yet.

Let me tell you something else I've learned about breast feeding. It's an ecstatic experience. The same hormone (oxytocin) that allows milk to flow from the back of the chest wall into the nipple also controls female orgasm. This so-called let-down reflex makes the breast feel very warm and full and fizzy, as if it were a shaken-up Coke bottle. That's not unpleasant. Moreover, the mouths of infants -- their gums, tongues, and palates — are perfectly designed to receive this milk. A newborn's mouth and a woman's nipple are like partners in a tango. The most expensive breast pump -- and I have a $500 one -- can only extract about half of the volume that a newborn baby can because such machines cannot possibly imitate the intimate and exquisite tonguing, sucking, and gumming motion that infants use to extract milk from the nipple, which is not unpleasant either.

Through this ecstatic dance, the breast-fed infant receives not just calories, but antibodies. Indeed the immune system is developed through the process of breast feeding, which is why breast-fed infants have fewer bouts of infectious diseases than bottle-fed babies. In fact, the milk produced in the first few days after birth is almost all immunological in function. This early milk is not white at all but clear and sticky and is called colostrum. Then, from colostrum you move to what's called transitional milk, which is very fatty and looks like liquid butter. Presumably then, transitional milk is even more contaminated than mature milk, which comes in at about two weeks post-partum. Interestingly, breast milk is so completely digested that the feces of breast-fed babies doesn't even smell bad. It has the odor of warm yogurt and the color of French mustard. By contrast, the excretions of babies fed on formula are notoriously unpleasant.

What is the price for the many benefits of breast milk? We don't yet know. However, one recent Dutch study found that schoolchildren who were breast fed as babies had three times the level of PCBs in their blood as compared to children who had been exclusively formula fed. PCBs are probably carcinogens. Why should there be any price for breast feeding? It should be a zero-risk activity.

If there was ever a need to invoke the Precautionary Principle — the idea that we must protect human life from possible toxic danger well in advance of scientific proof about that danger — it is here, deep inside the chest walls of nursing mothers where capillaries carry fat globules into the milk-producing lobes of the mammary gland. Not only do we know little about the long-term health effects of dioxin and PCB exposure in newborns, we haven't even identified all the thousands of constituent elements in breast milk that these contaminants might act on. For example, in 1997 researchers described 130 different sugars unique to human milk. Called oligosaccharides, these sugars are not digested but function instead to protect the infant from infection by binding tightly to intestinal pathogens. Additionally, they appear to serve as a source of sialic acid, which is essential to brain development.

Most recently, Swedish researchers discovered powerful anti-cancer proteins in breast milk. Activated by stomach acids, they appear to enhance cell suicide in defective cells, which is one way our own bodies protect us from developing cancer.'

So, this is my conclusion. Breast feeding is a sacred act. It is a holy thing. To talk about breast feeding versus bottle feeding, to weigh the known risks of infectious diseases against the possible risks of childhood or adult cancers is an obscene argument. Those of us who are advocates for women and children and those of us who are parents of any kind need to become advocates for uncontaminated breast milk. A woman's body is the first environment. If there are toxic materials from PVC in the breasts of women, then it becomes our moral imperative to solve the problem. If alternatives to PVC exist, then it becomes morally imperative that we embrace the alternatives and make them a reality.

---

[1] Carolyn Raffensperger and Joel Tickner, editors, *Protecting Public Health & The Environment: Implementing the Precautionary Principle* (Washington, D.C.: Island Press, 1999). 630.00. ISBN 1-55963-688-2. Telephone 1-800-828-1302.
[2] Sandra Steingraber, poet, writer, biologist, and cancer survivor, lives in Ithaca, N.Y.
[3] C. Kohler and others, "Protease activation in apoptosis induced by MAL," *Experimental Cell Research* Vol. 249, No. 2 (June 15, 1999). pga. 260-268.

Rachel's Environment & Health Weekly (ISSN 1078-103x) is published weekly by Environmental Research Foundation at 612 Third Street - Suite 2A, Annapolis, MD 21403-3246. Second-Class Postage paid at Annapolis, MD. **POSTMASTER:** Send address changes to *RACHEL'S ENVIRONMENT & HEALTH WEEKLY*, P.O. Box 5036, Annapolis, MD 21403-70.36. Peter Montague, editor (National Writers Union, UAW Local 1981/AFL-CIO); Maria B. Pellerano, associate editor. RATES: $25 per year for individuals and citizen groups; $45 for universities and libraries; $80 for professionals and government agencies; $15 for students and seniors; $400 for businesses; in Canada and Mexico. add $8.00; in all other countries, add SI 5.00. All payments in U.S. funds drawn on U.S. banks. Visa & Mastercard accepted. Telephone (410) 263-1584; fax: (410) *263-8944;* E-mail: erf@rachel.org. *Rachel's Environment & Health Weekly* is not copyrighted. Pruned on kenaf paper (100% acid-free, chlorine-free,' and tree-free).

Rachel's Environment & Health Weekly
P.O. Box 5036
Annapolis, MD *21403-7036*

SECOND CLASS

TO:

SIERRA CLUB
FOUNDED 1892

Santa Cruz County Group of the Ventana Chapter

P.O. Box 604, Santa Cruz, California 95061 phone: (831) 426-4453
FAX (831) 426-5323 web: www.ventana.org e-mail: scscrg@cruzio.com

July 25, 2000

The Board of Supervisors
County of Santa Cruz
County Government Center
701 Ocean Street
Santa Cruz, CA 95060

Dear Members of the Board:

The Santa Cruz Regional Group of the Sierra Club supports adoption by the Board of Supervisors on August 1 of an effective policy to reduce and eliminate the use of synthetic pesticides by the County in its own activities. Such a policy not only implements the County General Plan and the mandate of the voters in Measure "C" (adopted in 1990), but is essential for the protection of our air, water and land as well as the health of county residents.

Many communities throughout the State of California have adopted policies and ordinances to reduce and eliminate pesticide use, including the cities of Santa Cruz, Santa Monica and Arcata, the City and County of San Francisco, Marin County, and the Los Angeles Unified School District, to name a few. These communities have successfully reduced and in some cases completely eliminated their use of pesticides.

The Santa Cruz Regional Group urges adoption of a pesticide policy at least as strong as what has been adopted in the communities listed above, including a public participation, education and outreach program to assist county residents in obtaining information on alternatives to pesticide use for their own activities.

Thank you for taking immediate action to reduce and eliminate the County's use of pesticides.

Sincerely,

Patricia Matejcek

Patricia Matejcek, for the
Santa Cruz Regional Group
Sierra Club