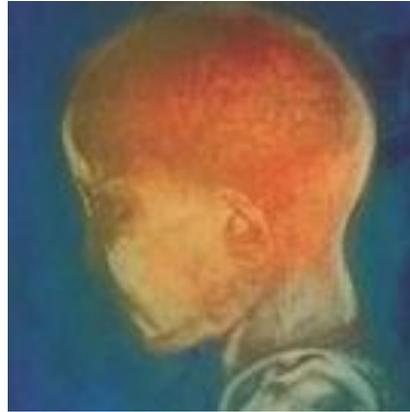




GREEN CHILD CARE:

Tools and Programs for Healthy Brain Development

2015 Child Health, Education and Care Summit
Sacramento, CA
February 12, 2015



Early Life Exposure to Chemicals: Implications for Child Care

Asa Bradman, PhD

Center for Environmental Research and Children's Health

First 5 Summit

Sacramento, CA

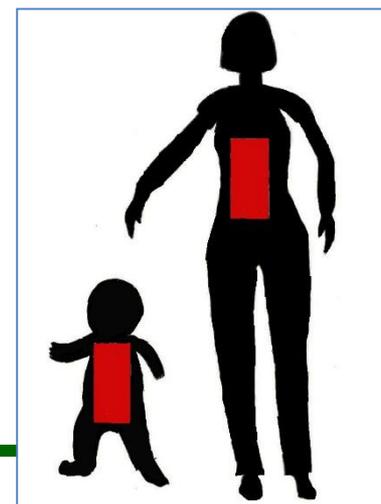
February 12, 2015

Today's Talk

- Why children are more vulnerable to toxic exposures
- What are some of the health problems associated with chemical exposures
- Highlights of recent research
- Hopes for the future

Children, especially young children, have higher exposure to environmental contaminants because they:

- Eat, drink, and breathe more per pound of body weight, compared with adults
- Have more skin surface relative to size; and their skin is more absorbent
- Spend most of their time indoors
- Have frequent contact with the ground or floor and put their hands in their mouths (infants eat a lot of dust)



Organophosphate Pesticide Levels in U.S. Population

- **6-11years old: 113 nm/L**
- **12-19 yearsold: 93 nm/L**
- **20+ years: 75 nm/L**

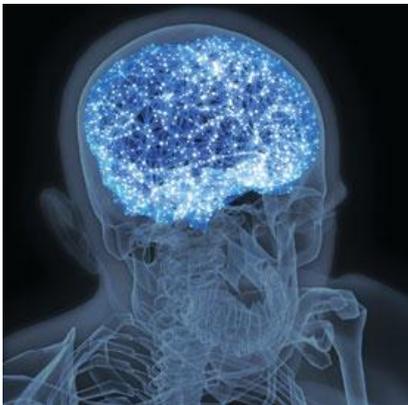
Source: Barr et al, 2005

Fetuses and children are more susceptible to chemical exposures



www.bloggers.com

- Many chemicals can get through the placental and blood brain barriers
- They may be less able to detoxify chemicals
- Developing organs are more sensitive - neural architecture not in place



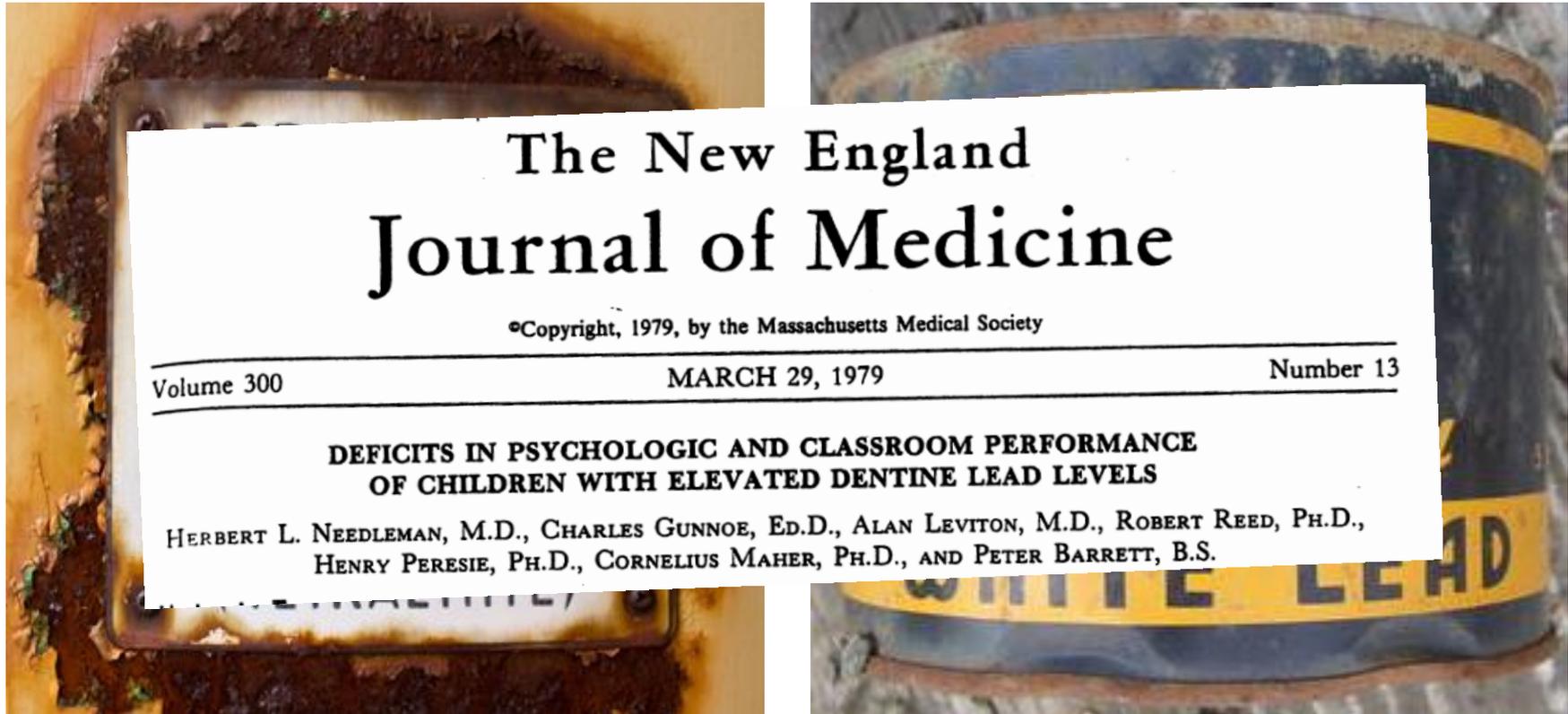
In-utero exposure to methyl mercury related to congenital cerebral palsy (1956)



These symptoms did not appear immediately after birth

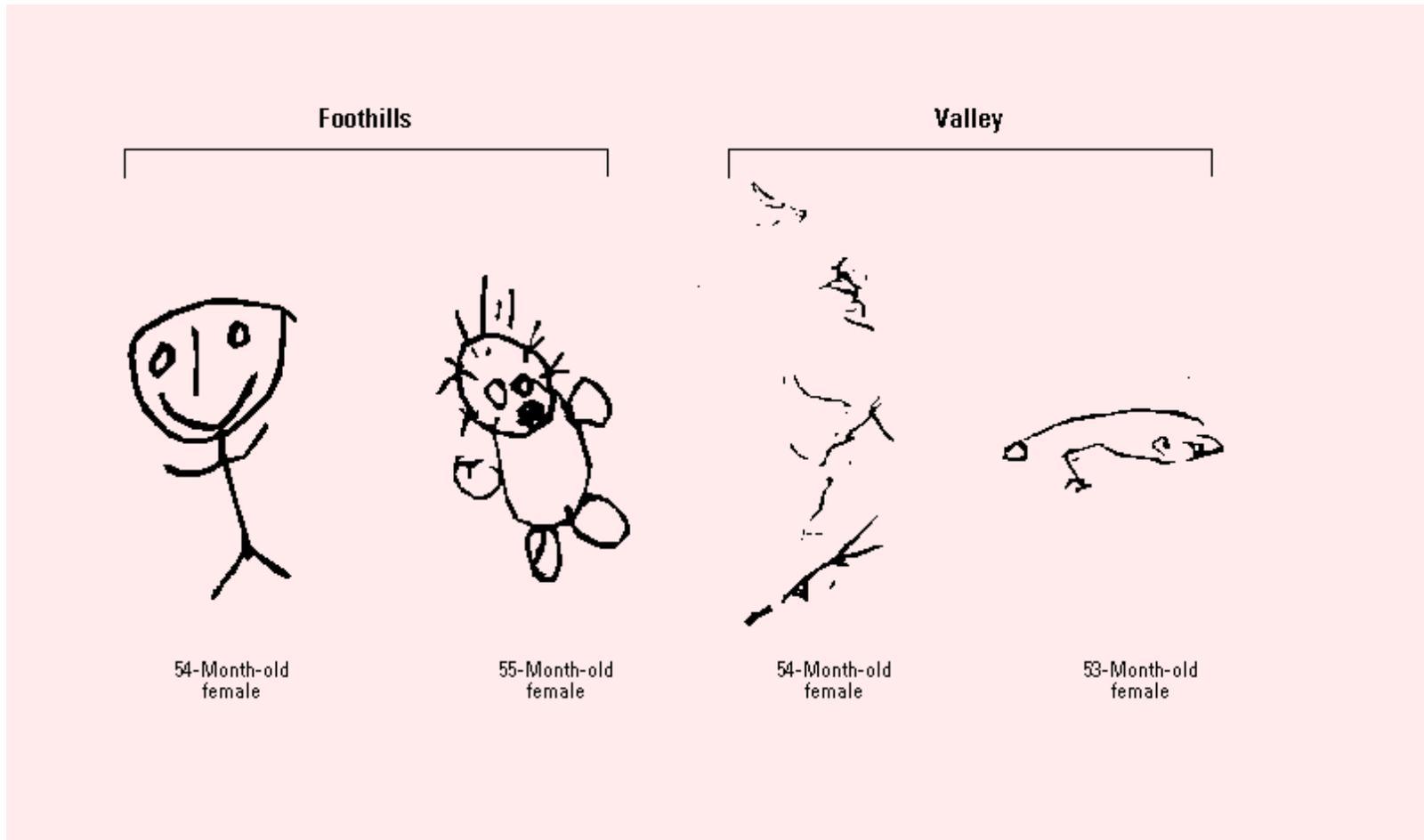
Photo: Eugene Smith

Low-level lead (1979)

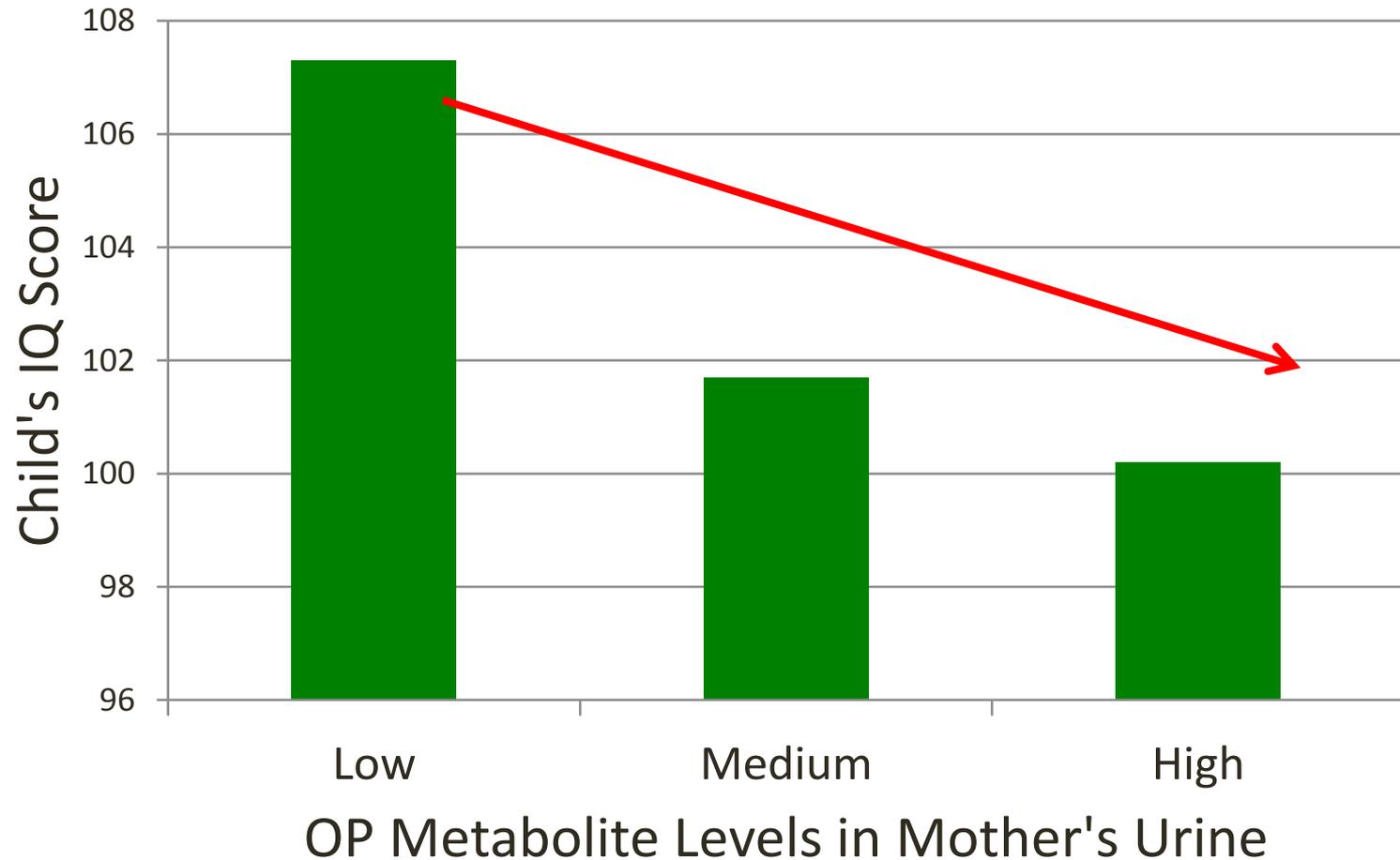


Wikipedia; www.blog.case.edu; Needleman et al., NEJM 1979

An early study in Mexico raised concerns about pesticides (1998)



OP pesticide levels and IQ at age 7



OP Metabolite Levels in Mother's Urine

Mother's environmental tobacco smoke exposure during pregnancy and externalizing behavior problems in children

Jianghong Liu^{a,*}, Patrick W.L. Leung^b, Linda McCauley^c, Yuexian Ai^d, Jennifer Pinto-Martin^a



Source: Liu et al 2012

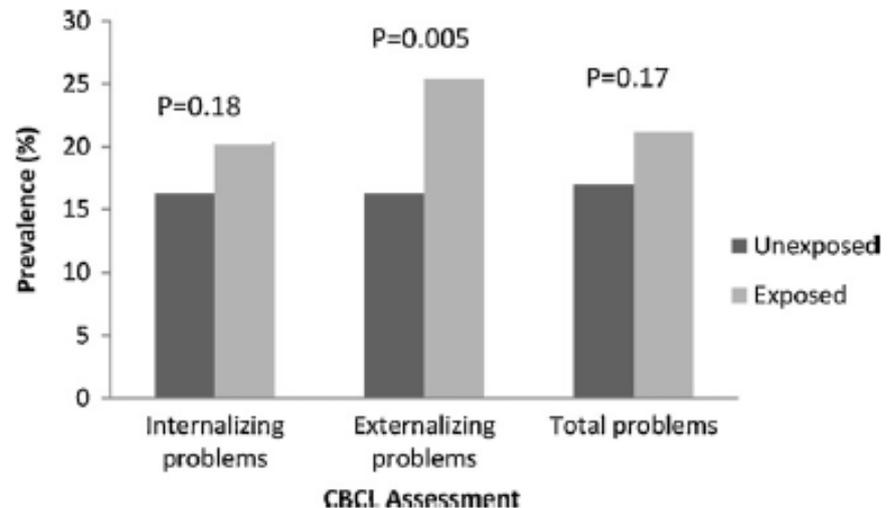


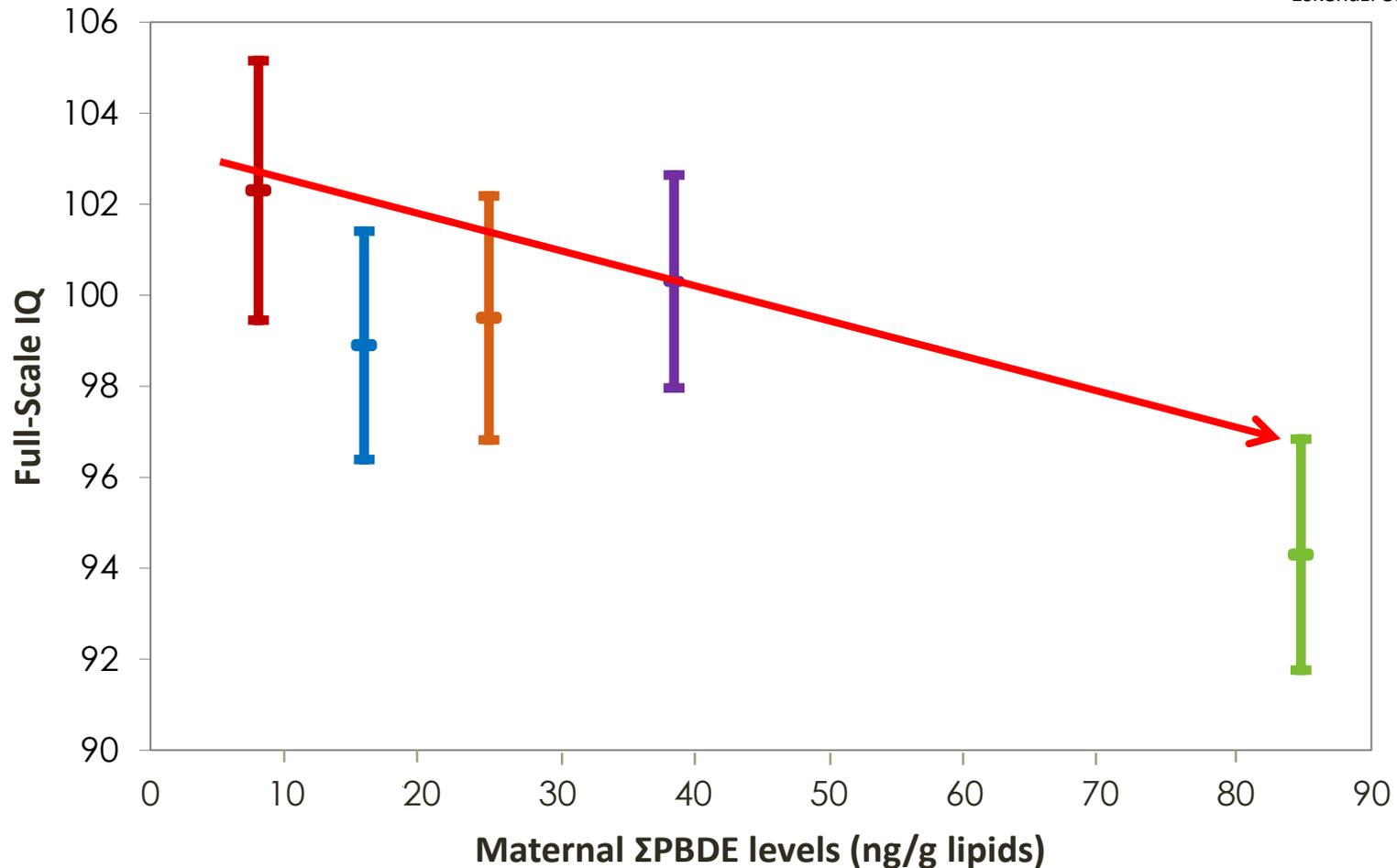
Fig. 1. Prevalence of behavior problems among children of mothers with and without ETS exposure during pregnancy.

We have also studied brominated flame retardants (PBDEs)



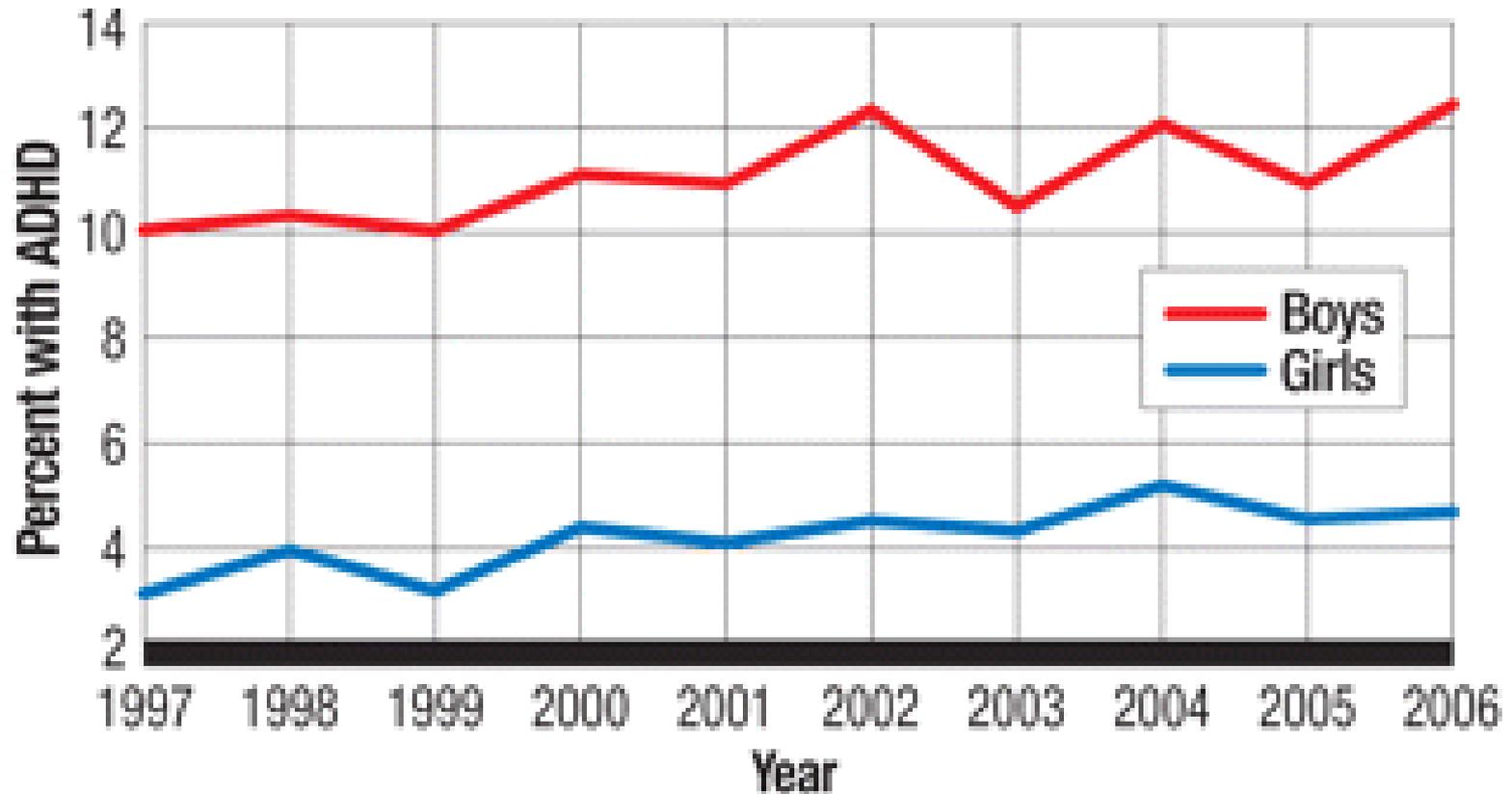
Prenatal PBDEs related to WISC IQ at age 7

Eskenazi et al., 2012 EHP

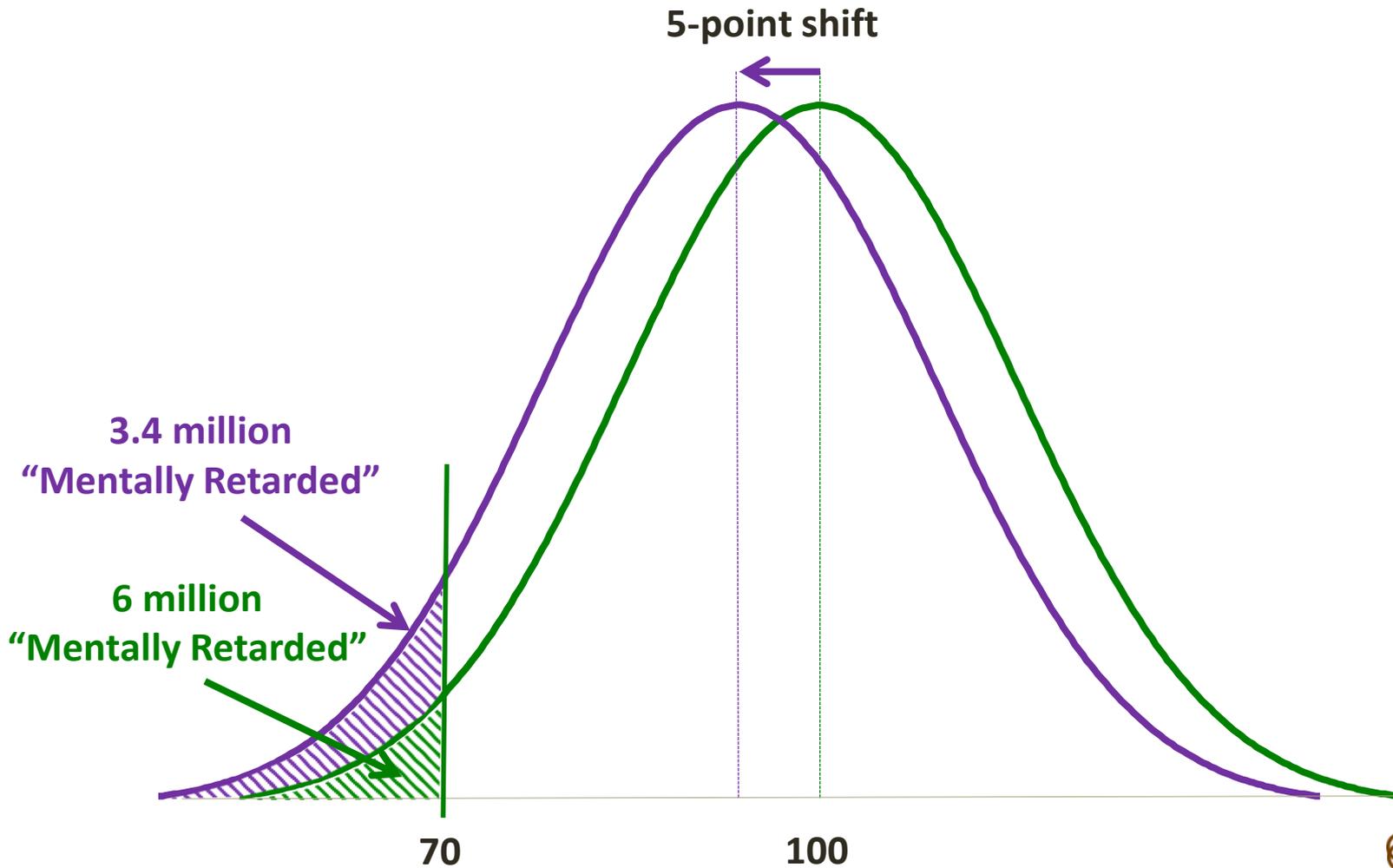


Adjusted for child's age at assessment, sex, home score at 6 months, language of testing, mother's years living in US

Could environmental chemical exposure explain, in part, the increasing prevalence of some developmental disorders?



Population shift in IQ

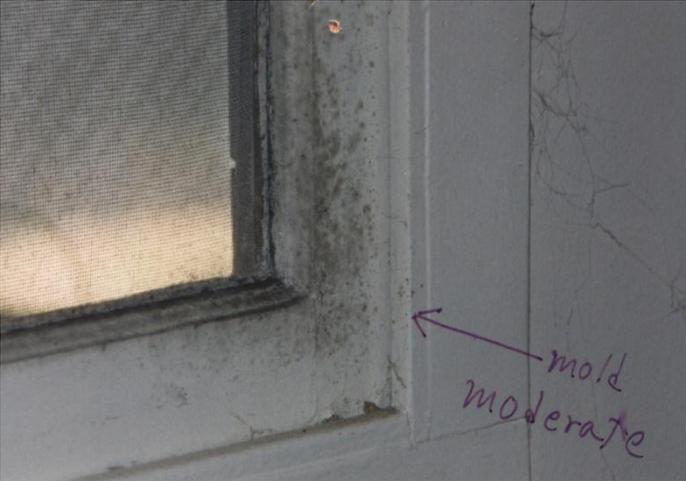


Weiss, B. Trends Pharmacol Sci (1988)

Why are child care environments so important?



- Kids spend a lot of time in child care.
- Substandard housing is common;
- Daycare/preschool environments may offer healthier environments;
- A locus of outreach to families



But need to be evaluated:

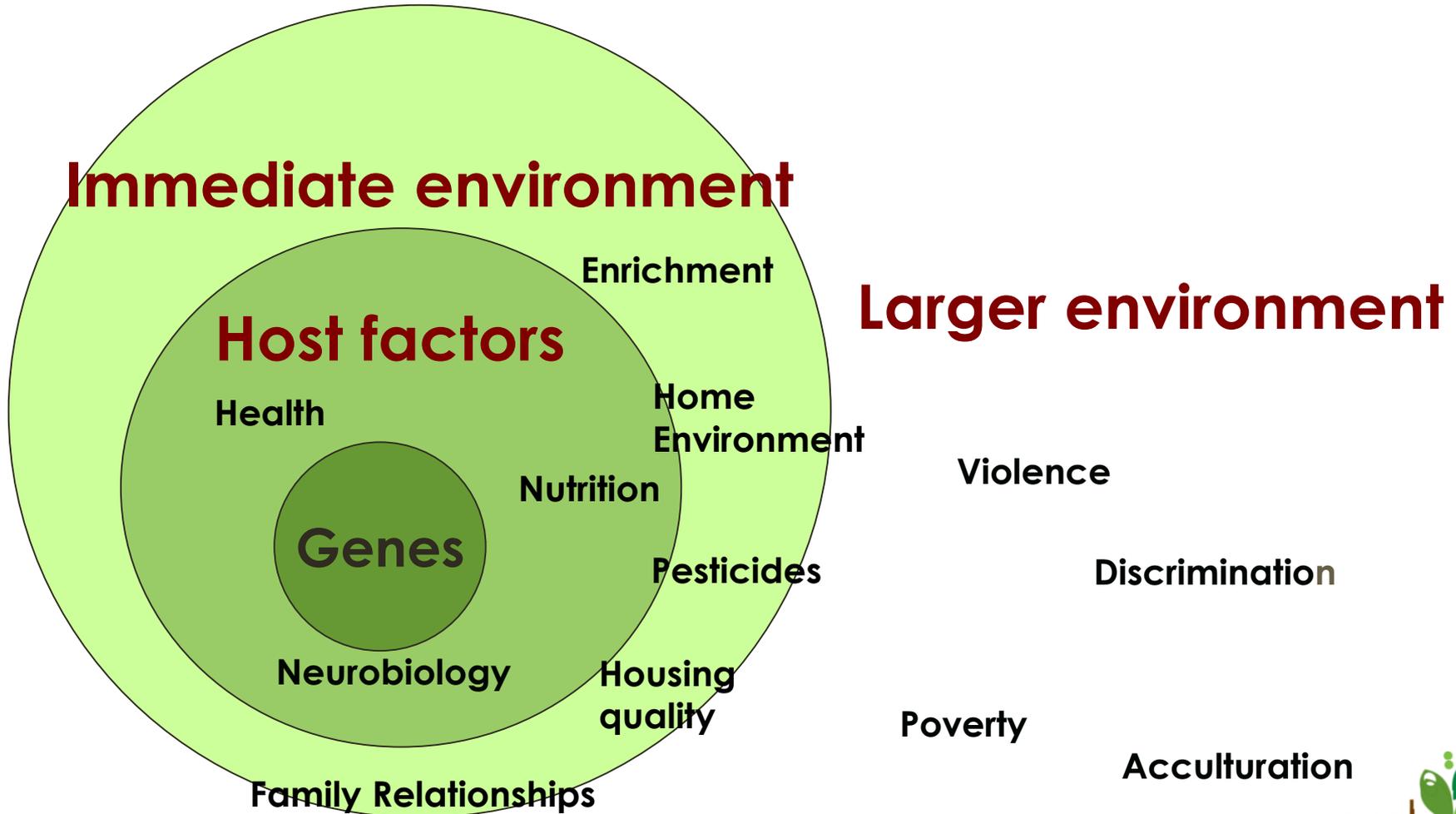
My Daughter's preschool had peeling lead paint adjacent to an eating area=125,000 ppm.

The standard is 600 PPM



Nationwide=14% of facilities have lead.
(EPA/HUD)

Neurobehavioral development is determined by many factors



Some determine risk and some resiliency



*What are the
lifetime
consequences of
early life exposure
to environmental
toxicants?*



Neurotoxicology and Teratology

Volume 23, Issue 6, November–December 2001, Pages 511–518



Early exposure to lead and juvenile delinquency

Kim N. Dietrich^{a, b, c},  , Ris M. Douglas^{b, c}, Paul A. Succop^a, Omer G. Berger^{b, c}, Robert L. Bomschein^a

Little Data on Exposures in Child Care



Pest Management and Pesticide Use

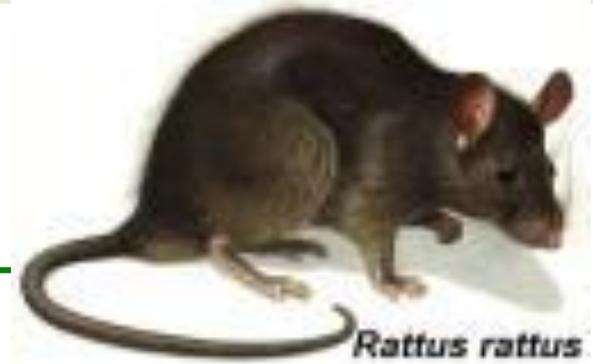
in California Child Care Centers



Prepared for **THE CALIFORNIA DEPARTMENT OF PESTICIDE REGULATION**
by **THE CENTER FOR CHILDREN'S ENVIRONMENTAL HEALTH RESEARCH,
UC BERKELEY SCHOOL OF PUBLIC HEALTH**

June 2010





90% reported at least one pest problem.



Pesticide Use in California Child Care Centers

Used any pesticide at least once:	55%
Used spray or fogger (non-exempt):	47%

Pesticide Application Frequency

Weekly Applications(n=2)	0.3%
Monthly Applications	20%
Occasional	29%

Environmental Monitoring in California Child Care Facilities

Air and dust samples collected
from 40 childcare facilities. Tested for:

Particles

Phthalates

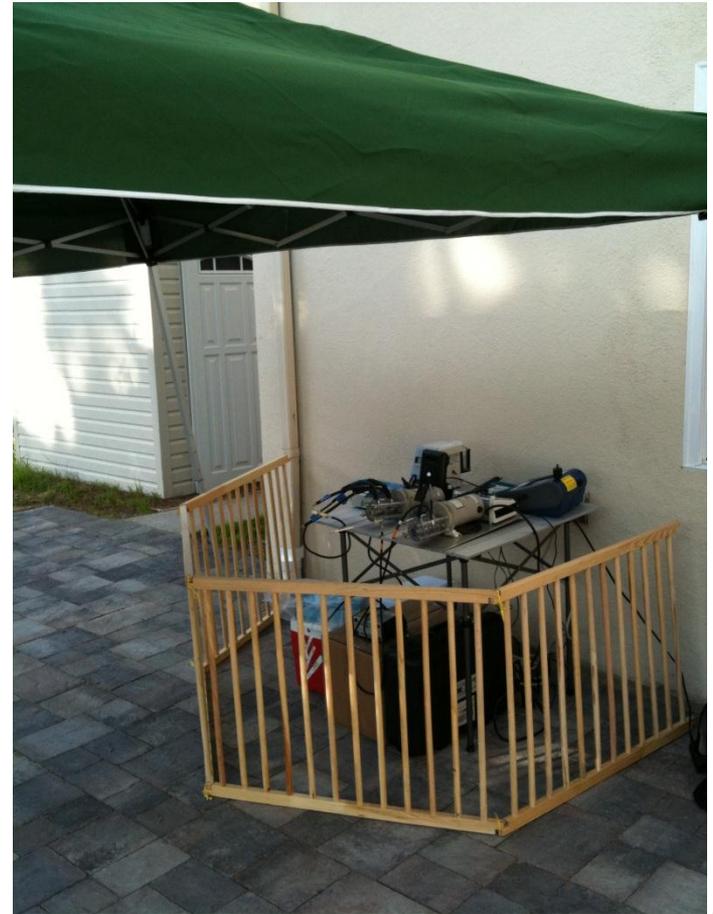
Pesticides

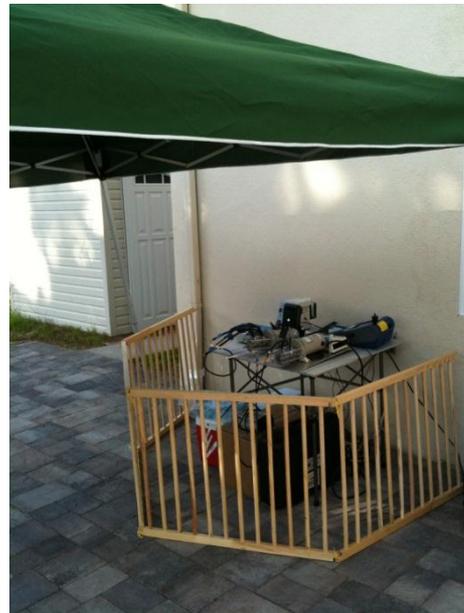
VOCs

Flame Retardants

Carbonyls

PFCs

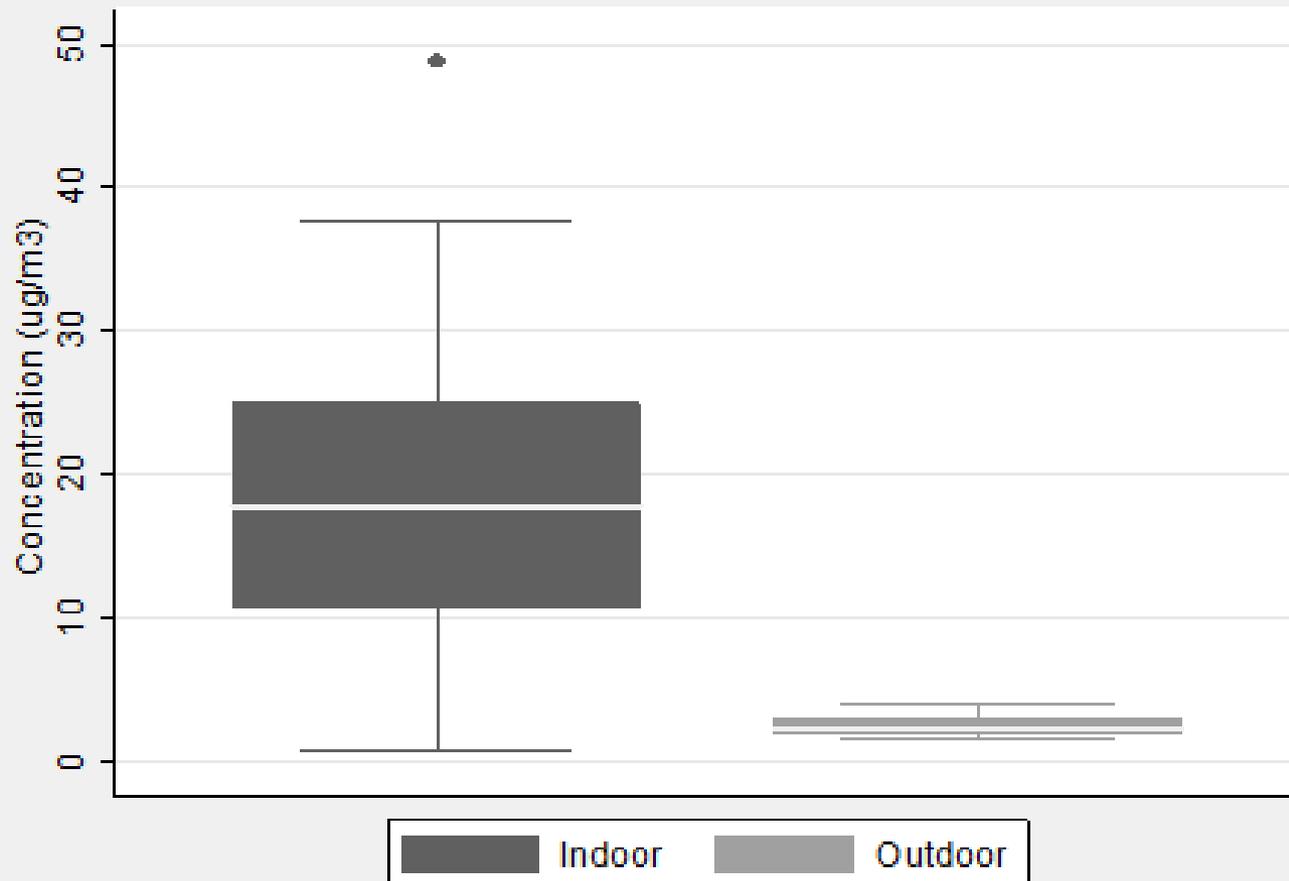




Volatile Organic Carbons

- Trend of higher levels inside.
- VOCs related to:
 - Cleaning/personal products (d-limonene, decamethylcyclopentasiloxane)
 - building materials (formaldehyde)
 - traffic (e.g, benzene).

Indoor vs. Outdoor Formaldehyde Concentrations



Proportion of Aldehydes Exceeding Guidelines

	California 8-hour REL	US EPA RfC
Formaldehyde	87.5%	---
Acetaldehyde	----	30%

Several VOCs may exceed Prop. 65 cancer guidelines

Based on child-adjusted OEHHA No Significant Risk Level (NSRL):

- Benzene
- Chloroform
- Ethylbenzene
- Acetaldehyde
- Formaldehyde

Median Dust PBDE Levels

(n=39, Detection Frequencies=100%)

Analyte (ng/g)	Median	Max
BDE-47	768	15116
BDE-99	1031	25522
BDE-100	211	5525.0
BDE-209	1442	16792
Σ BDE	4205	55155

PBDE dust levels compared to homes (median)

Analyte (ng/g)	Child Care Facilities	Local Homes* (Salinas/Oakland)
BDE-47	768	2940
BDE-99	1031	4965
BDE-100	211	1055
BDE-209	1442	--

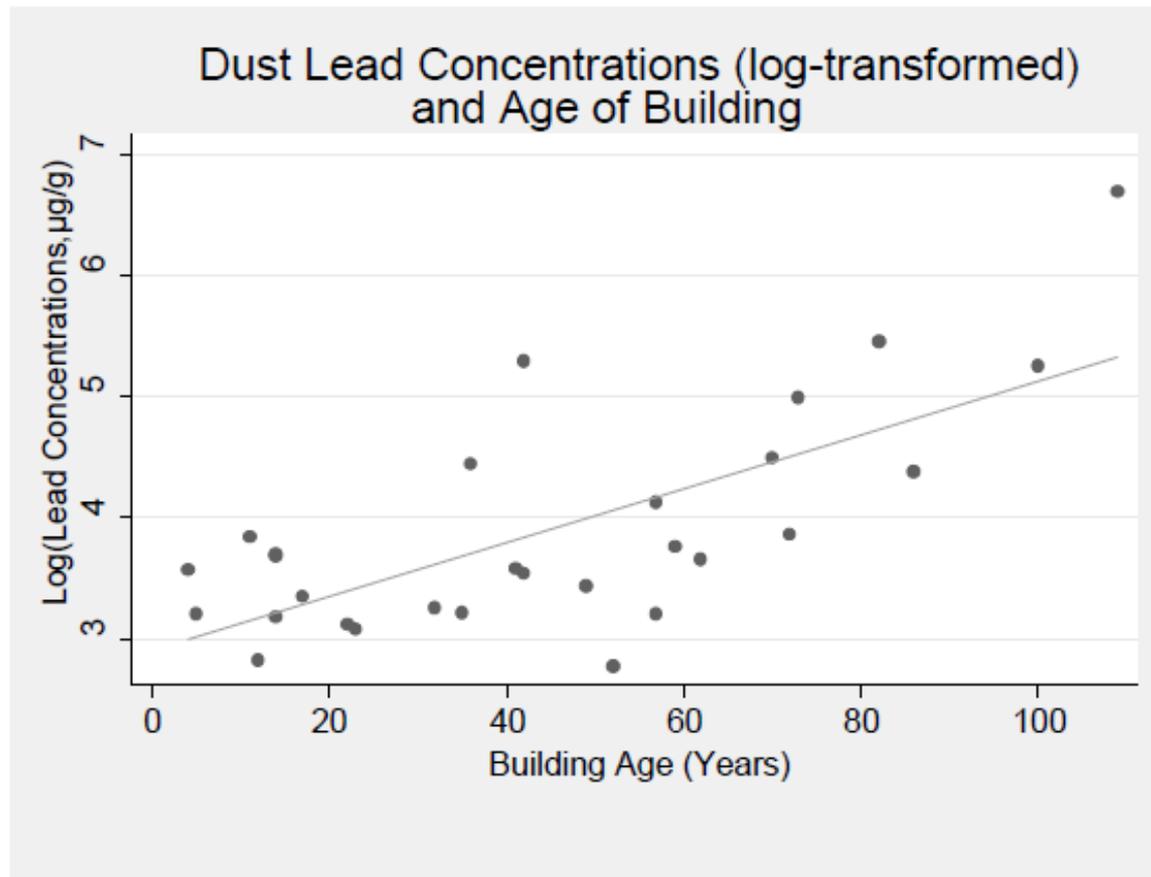
*Quiros et al. 2011 (sampled in 2006)

Foam Napping Equipment

Analyte (ng/g)	No Foam (median)	Foam (median)	Significant
Tris (2-chloroethyl) phosphate	285	643	Yes
Tris (dichloro propyl) phosphate	1511	2837	Yes

About 2x

Dust Lead Concentrations



Hopes for the future:

- ❖ Comprehensive resources and training available to ECE providers in California
- ❖ Recognition of the important role that child care providers can play in improving environments in their community

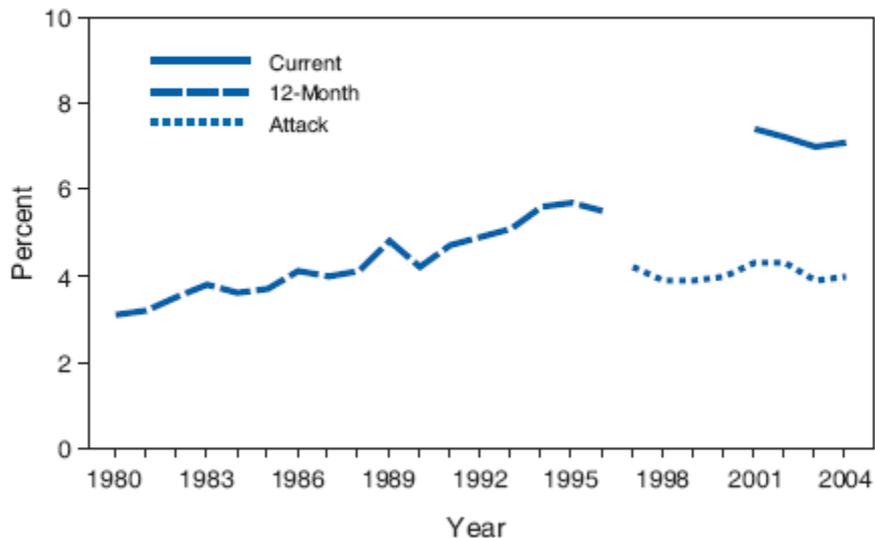
Thanks to our funders



Other Childhood Diseases on the Rise

Asthma

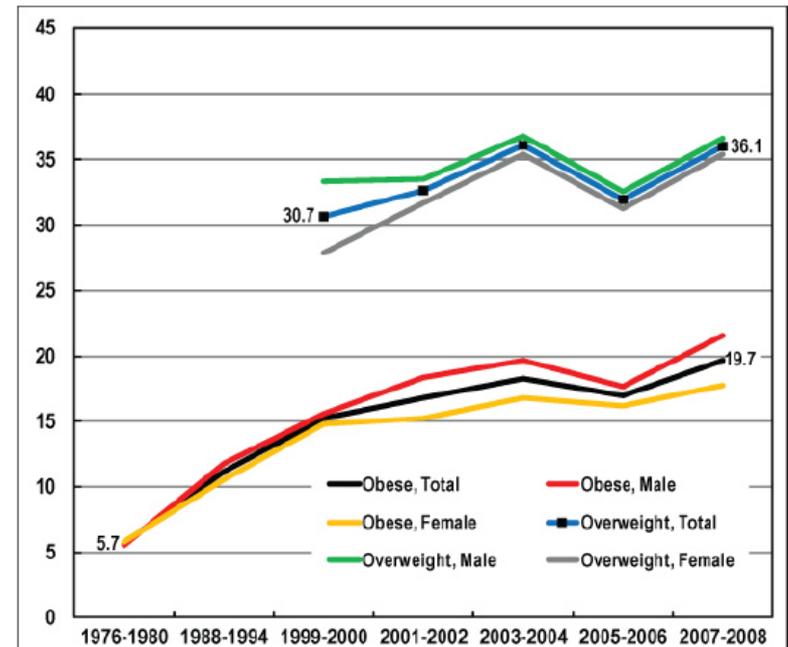
FIGURE 1. Estimated prevalence of asthma, by persons who reported an asthma attack during the preceding 12 months, persons who reported having asthma during the preceding 12 months, and persons who reported current asthma — United States, 1980–2004



Source: National Health Interview Survey; National Center for Health Statistics.

Child Obesity

Figure 1: Trend in Obesity and Overweight Prevalence (%) among U.S. Male and Female Children Aged 6-17 Years, 1976-2008



Source: Singh and Kogan, DHHS, 2010

Designing Healthy Children Centers

Kathy Tama

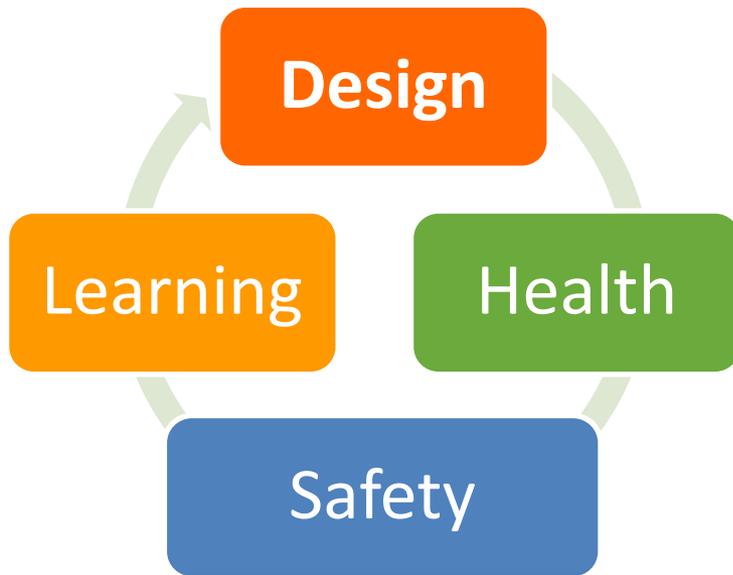
First 5 Summit Sacramento, CA

July 12, 2015

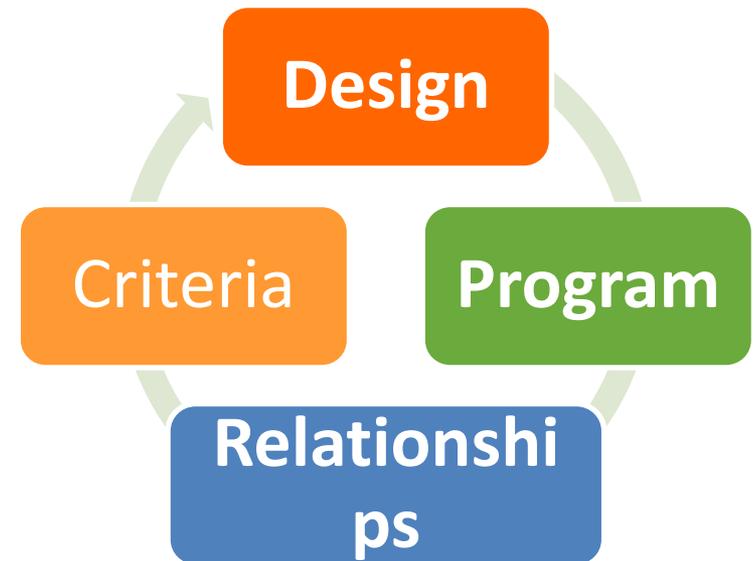


Design Process

Impacts



Based On



ECE Facility Design Criteria



Early Childhood Education
Facility Design Criteria

"Classroom Best Practices
Checklist"

December 2014

Copyright 2014 Kathryn Tama

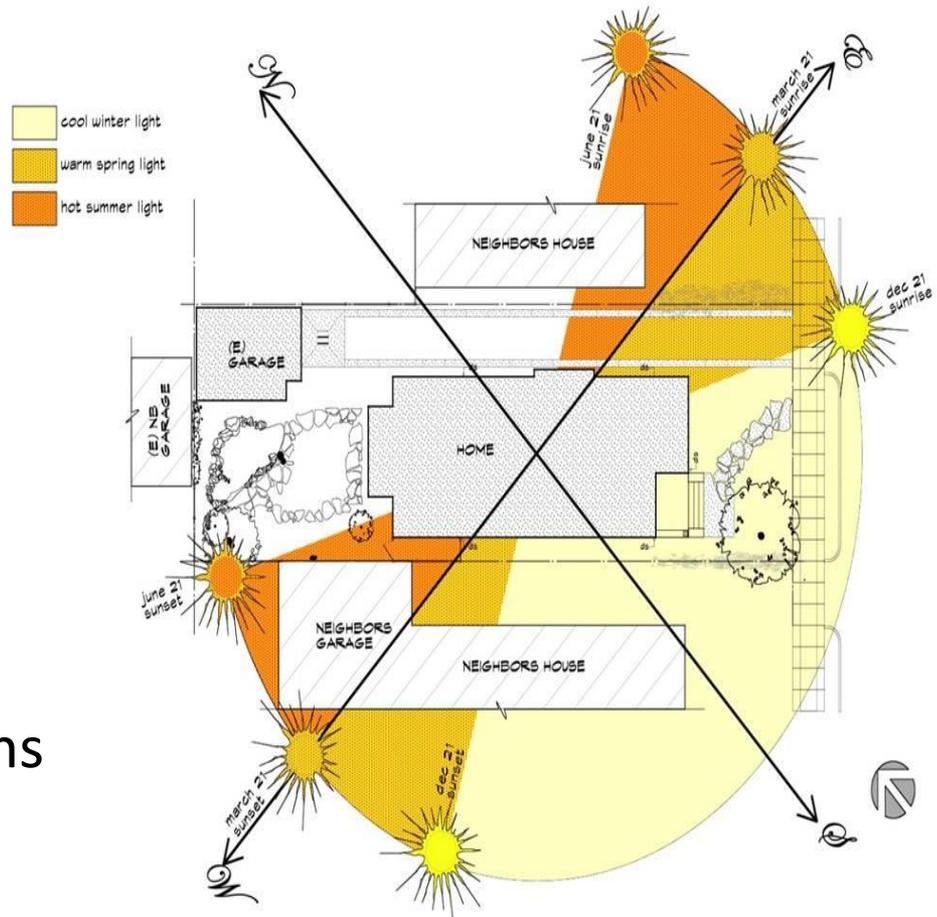
- 2013 CA Compressive Early Learning Plan
- LINCC "Classroom Best Practices Checklist"
- Distribution mid-2015

Site Considerations

✓ External Factors

■ Site Analysis

- Air
- Soil
- Ground Water
- Gas lines
- Traffic
- Future Building Plans
- Weather Patterns
- Sun



PROJECT	DATE	1/30/04	PAGE	A-2.1
	SCALE	1/16"=1'-0"	DRAWN BY	LVS
Permaculture @ Home in the City				
DRAWING		SUN PATH DIAGRAM		
NATIVEARCH 434 65TH STREET OAKLAND, CA 94609 P. 510-452-6038 NATIVEARCH@EARTHLINK.NET				

Program Considerations

✓ **Over Crowding**

- Supportive Responsive Relationships
- Stress
- Infection
- Noise Level
- Over Stimulation
- Can't Make Connections



Small Group Size & Low Child-Teacher Ratios

✓ Group Size & Ratios

<input type="checkbox"/> ≤12 months	Group Size 6	Ratio 1:3
<input type="checkbox"/> 13-35 months	Group Size 8	Ratio 1:4
<input type="checkbox"/> 3 year-olds	Group Size 14	Ratio 1:7
<input type="checkbox"/> 4 year-olds	Group Size 16	Ratio 1:8
<input type="checkbox"/> 5 year-olds	Group Size 16	Ratio 1:8

Endorsed by

- **American Academy of Pediatrics & American Public Health Association**
- **National Resource Center for Health and Safety in Child Care and Early Education**
- **Local Initiatives Support Corporation (LISC)**
- **Harvard University - Center on the Developing Child**

Small Group Size & Low Child-Teacher Ratios



- Meaningful responsive relationships
- Children receive better quality care
- Form secure emotional attachments
- Higher social competence with peers
- Improved verbal interactions

Adequate Activity Space

✓ **50 Usable Square Feet per Child** excludes

- Circulation pathways
- Classroom support areas - food prep, storage
- Child diapering & toileting areas
- Cribs and nap rooms
- Furniture: shelves, etc.
- Administration areas

Adequate Activity Space

- Essential for healthy, safe, learning
- Encourages strong positive relationships
- Too small classrooms
 - Sick more often
 - Aggressive behavior



Classroom Sinks

✓ Child Height Sinks

- All Classrooms 1 child-height sink in diaper/toileting
- All Classrooms 1 child-height sink in classroom

✓ Adult Height Sinks

- IT Classrooms 1 adult-height sink dedicated in diapering area
- All Classrooms 1 adult-height sink dedicated snack/food prep
- All Classrooms 1 adult-height sink dedicated non-food activities

Classroom Sinks



- Essential for Healthy Classroom
- Personal & Center Hygiene
- Disease Transmission
- Prevent Contamination
- Located Require Hand Washing

Good Air Quality

☐ Heaters & Air Conditioners

- HVAC controls in classroom staff adjust
- Perform yearly maintenance inspection
- Correct capacity & quiet
- Change filters quarterly

☐ Ventilation System

- To control & remove odors
- Vent to outdoors, not back into building
- Ventilation diapering & toileting areas



Good Air Quality

Fresh Air and Circulation

- Minimum 2 operable windows with screens

Construction & Furniture Selection

- Materials do not off-gas & non-toxic

Paint and Finishes

- Zero to low Volatile Organic Compounds (VOCs)

Moisture Leaks - Potential Mildew & Mold

- Toilets, sinks, appliances, ceiling, window, doors, etc.



Good Air Quality

❑ Flooring potential sources of mildew & mold

- Flooring easy to clean & nontoxic
- Linoleum

❑ Carpeting not recommended

- Cleanable area rugs non-slip padding
- IT & large area carpet tile
 - Padded, low-pile, neutral color
 - Non-toxic, anti-microbial
 - Easy to clean & replace



Good Air Quality

☐ Use Outdoor & Indoor Mats

- Commercial
- Durable
- Easy to clean



Adequate & Organized Storage

✓ Ample, Appropriate & Organized Storage

- Conveniently located
- In-classroom frequently
- Outside-classroom infrequent
- Upper wall cabinets
- Identify space for:
Diaper pails, recyclables,
sink trash cans



Adequate & Organized Storage



Resources

- “Health and Safety Checklist for Early Care and Education Programs”
CA Childcare Health Program
ucsfchildcarehealth.org
- “Integrated Pest Management: A Curriculum For Early Care and Education Programs”
CA Childcare Health Program
ucsfchildcarehealth.org
- “GreenCare for Children Pledge Worksheet”
greencareforchildren.org
- “Tools for Schools”
epa.gov/iaq/schools/

Designing Healthy Children's Centers



Kathryn Tama
kathryn.tama@gmail.com



Tools and Practices for Green Child Care

Bobbie Rose RN PHN
UCSF School of Nursing
California Childcare Health Program

Healthy Brain Development

- Healthy Relationships
- Healthy Nutrition
- Healthy Environments

Exposures that Can Harm Children

- Lead
- Pesticides
- Pests and Pest Waste
- Chemicals in Disinfectants/Air Fresheners
- Flame Retardants
- Dust
- Mold
- Viruses and Bacteria



Green Cleaning

and

Integrated Pest Management
(or IPM for short)

Steps to Green Cleaning

- Bring less dirt in (door mats, shoe-off policies).
- Use a HEPA Filter Vacuum Cleaner.
- Use microfiber mops and cloths.
- Reduce clutter.
- Repair hard surfaces, (including chipped paint.)
- Repair leaks in roofs, pipes, windows etc.
- Provide good ventilation (change filters, open windows).
- Choose less toxic cleaners and disinfectants.
- Wash hands.



Dyson DC65

Green Cleaning

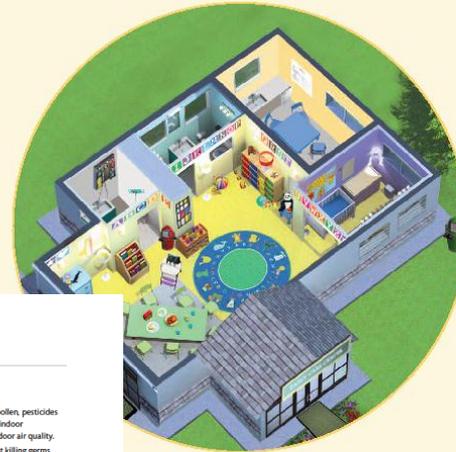
2013 Update: Bleach-free Disinfection and Sanitizing for Child Care



January 2013
www.sfgov.org/asthma



Green Cleaning, Sanitizing, and Disinfecting: A Checklist for Early Care and Education



HEALTH AND SAFETY NOTES

GREEN CLEANING

What is "green cleaning"?

Green cleaning describes the growing trend of using cleaning products and methods that are safer for human health and the environment. By using products with less toxic ingredients, early care and education (ECE) programs can protect the health of children and staff and protect the environment. Environmentally friendly cleaning is accomplished by establishing policies and procedures and providing staff training in safe and effective cleaning practices.

Green cleaning improves indoor air quality and is often less expensive. The goal of green cleaning in ECE programs is to create environments that support healthy growth and learning for children and show a commitment to a healthy work environment for staff. The key goals of green cleaning are to:

- ▶ keep the environment clean to protect children and staff from germs and triggers of illnesses such as asthma and allergies.
- ▶ protect children and staff from unnecessary exposure to chemicals in cleaning products that may cause harmful health effects.

To accomplish these goals, choose cleaning products and develop policies carefully and provide training for classroom, kitchen and custodial staff. In the past, the main priority for cleaning and sanitizing in ECE environments has been protecting children from the spread of infectious disease. But recent research suggests that the chemicals used to clean or kill germs may have harmful health effects. There are safer ways to protect children from the spread of infectious diseases. For example, teaching children to wash their hands and making handwashing a routine practice in ECE is an effective policy for preventing the spread of germs that make children sick.

Regular cleaning is important

The everyday, routine cleaning activities of sweeping, wiping, vacuuming and scrubbing remove dirt, oils and moisture that germs need to thrive. When there is less buildup of dirt and germs, there is less need for strong chemicals to clean and sanitize.

© 2013 UCSF Children's Health Program

- ▶ Regular cleaning keeps dust, pollen, pesticides and other particles out of the indoor environment and improves indoor air quality.
- ▶ Sanitizers are more effective at killing germs when the surface is clean.

Please note that green cleaning alone does not disinfect or sanitize surfaces. See CCHP's Health and Safety Note, *Sanitizing Safely and Effectively in ECE* for more information on sanitizers and disinfectants.

STEPS TO KEEP YOUR CHILD CARE ENVIRONMENT CLEAN

- ▶ Choose the right equipment and clean regularly to reduce the need for chemicals to clean, sanitize and disinfect.
- ▶ Use a vacuum cleaner with a high efficiency particulate air (HEPA) filter. HEPA filtration vacuum cleaners trap mold spores, dust, dust mites, pet dander and other irritating allergens from surfaces.
- ▶ Use microfiber mops and cloths. Microfiber mops and cloths are made from a strong, lint-free synthetic fiber that is very absorbent. Dust, dirt and germs are attracted to and held tightly by the microfiber, so they are not spread from one area to another. Microfiber mop heads and cleaning cloths hold sufficient water for cleaning, yet don't drip, and so less cleaning product is needed. Microfiber mops are also lighter and easier to use than conventional mops.
- ▶ Place floor mats at building entryways. Teach children to clean their feet when entering the building. This may capture 80% of soil entering indoor areas and reduces the amount of soil that must be cleaned.
- ▶ Consider a policy that encourages people to remove their shoes when they come indoors. Ask staff and families to provide a pair of "indoor" shoes or slippers.
- ▶ Decrease clutter to make cleaning easier. Store equipment and supplies in plastic boxes with tight-fitting lids.

Sanitizing, and Disinfecting Toolkit for Early Care and Education was developed by the University of California, San Francisco School of Nursing's Institute for Health Equity Research and Promotion, the University of California, Berkeley's Center for Environmental Research and Children's Green Solutions, with support from the California Department of



Choosing Products to Sanitize and Disinfect

Oxivir® Five 16 Concentrate

Disinfects in ½ the time of traditional disinfectants*

Oxivir® Five 16 Concentrate is a brand new Hydrogen Peroxide-based broad-spectrum hospital-grade disinfectant that dilutes at a ratio of 1:16 and disinfects hard, non-porous surfaces in 5 minutes.**

Oxivir® Five 16 Concentrate kills a wide variety of organisms of concern including Norovirus, Hepatitis B, Hepatitis C, Canine parvovirus, Avian influenza and the drug resistant organisms MRSA, MRSE and VRE.

When compared to other dilutable disinfectants with 10 minute contact times, this product disinfects in half the time, which means that healthcare professionals can be confident that they are using their disinfectant properly. In addition to its efficacy, **Oxivir® Five 16 Concentrate** has an excellent environmental profile. It is also essentially non-irritating to eyes and skin at use dilution.



EPA Reg. No. 70627-58
Health Canada DIN No. 02332965

Key Benefits of Oxivir® Five 16 Concentrate

- ▶ Dilutable disinfectant with 5 minute contact time increases the likelihood of proper usage.
- ▶ Kills Norovirus and Canine parvovirus at standard 1:16 disinfection use dilution.
- ▶ Regular use helps reduce costs associated with HAIs, including extended hospital stays and treatment.
- ▶ Can be used with microfiber cleaning tools.
- ▶ Non-corrosive formula is safe on most healthcare hard nonporous surfaces.
- ▶ Meets bloodborne pathogen standards for decontaminating blood and body fluids.
- ▶ Available in closed loop dispensing for cost control and bulk packaging for mobility/flexibility.



* Many disinfectants require a 10-minute contact time to disinfect hard surfaces. Oxivir® Five 16 Concentrate requires 5 minutes.
** Note: not recommended for floors at disinfectant strength (1:16).

PREvention™



Accel® PREvention Concentrate

Your Daily Dose for Greener and Faster Environmental Surface Infection PREvention!

Accel PREvention Concentrate is the **FIRST & ONLY** Green Certified 5 Minute Broad-Spectrum Intermediate Level Concentrated Disinfectant! PREvention Concentrate is ideal for daily cleaning and disinfection of large environmental hand touch surfaces and is available in unique formats including:

- **32oz Dosing Bottle** - easy to use dosing bottle allows for accurate dispensing of concentrated solution
- **5L Closed Loop Bottle** - closed Loop design prevents user exposure to the concentrated solution and is designed for use with the Accel Dilution System

5 Minutes! Bactericidal, Virucidal, Tuberculocidal, Fungicidal (1:40)
30 Seconds! Broad-Spectrum Sanitizing (1:128)
Light Duty Cleaning (1:256)

PREvention Concentrate Reference Sheet available with complete list of claims

Disinfection claims include (but not limited to):

- Antibiotic Resistant Organisms (AROs) including MRSA
- Norovirus
- Poliovirus - General Virucide claim with Health Canada
- Bloodborne Pathogens
- *Mycobacterium terrae*
- *Trichophyton mentagrophytes*



Why Choose AHP?



CLEANER | AHP's proven cleaning efficiency results in speeded efficiencies that prevent or reduce Accel products use tested in a soil challenge and are recognized as One Step Cleaner Disinfectants.



FASTER | AHP's unique contact time on a broad spectrum of organisms resulting in user compliance. Accel products have rapid and realistic contact times effective against a broad spectrum of organisms including difficult to kill pathogens such as Norovirus.



RESPONSIBLE | AHP is designed to be easier on employees. This means washing the product on your face and body with a 20:1000 ratio is not irritating to the skin and is not toxic. For use of THE AHP products see **SEE BALANCE** at Safety & Ergo.



SUSTAINABLE | Prevention Peroxide breaks down into water and oxygen, including environmental impact. Accel products include EcoLogo certified disinfection cleaners/disinfectants (CCD 156)

Accel PREvention Concentrate Specifications

Product Number & Container Size	ACCPREVC32 ACCPREVC4 ACCPREVC5 ACCPREVC20	32oz Concentrate - Dosing Bottle 4 Litre Concentrate Bottle 5 Litre Concentrate - Closed Loop 20 Litre Concentrate Pail
DIN #	02361396	
Concentration of Active	7% Hydrogen Peroxide (Concentrate)	
Dilution(s)	1:40 for Disinfection 1:128 for Sanitizing 1:256 for Light Duty Cleaning	
Shelf Life	24 Months, 30 Days Diluted	
Test Strips	AHP1750	

viroxaccel.ca

MSDS



SaniDate® 5.0

MATERIAL SAFETY DATA SHEET

1. IDENTIFICATION

Product Name: SaniDate 5.0
Product Type: Sanitizer/Disinfectant
Manufacturer: BioSafe Systems, LLC
22 Meadow St.,
East Hartford, CT 06108
Telephone Number: 1.888.273.3088
EPA Registration No. 70259-15
Emergency: CHEMTRAC: 800-424-9300
Creation Date: 12/2013

2. HAZARDS IDENTIFICATION

Hazard Classification: Oxidizer
Signal Word: Danger
Hazard Statements: Strong oxidizing agent. Do not use in concentrated form. Never bring concentrate in contact with other pesticide, cleaners or oxidative agents.
Precautionary Statements: Hazards to Humans and Domestic Animals-Danger: Corrosive. Causes irreversible eye damage. Harmful if swallowed, inhaled or absorbed through skin. Do not get in eyes, on skin or on clothing. Wash thoroughly with soap and water after handling. Remove and wash contaminated clothing before reuse.

3. COMPOSITION/INFORMATION

Hydrogen Dioxide.....7722-84-1.....23.0%
Peroxyacetic Acid.....79-21-0.....3.3%

4. FIRST AID MEASURES

If in eyes: Hold eye open and rinse slowly and gently with water for 15 – 20 minutes. Remove contact lenses, if present, after the first 3 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15 – 20 minutes. Call a poison control center or doctor for treatment advice.

If swallowed: Call poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call poison control center or doctor for treatment advice.

NOTE TO PHYSICIANS: Probable mucosal damage may contraindicate the use of gastric lavage.

5. FIRE FIGHTING MEASURES

Special fire hazards: Decomposing product releases oxygen thereby adding to a fire hazard.

Fire fighting methods: Product is not flammable and can be quickly diluted with clean water.

Specific hazards: Oxidizing Agent. May cause spontaneous ignition with oxidizing agents.

6. ACCIDENTAL RELEASE MEASURES

Precautions: Observe hazards outlined in Sections 3 & 8. Avoid materials that are incompatible with concentrate (Section 10). All receiving equipment should be clean, dry, labeled and made of materials compatible with the product.

Cleanup: Do not return spilled or contaminated material to inventory. Rinse small amounts to drain when possible. Dike or dam large spills, pump to containers or soak in inert absorbent. Flush residue to sanitary sewer, rinse area thoroughly with clean water. Waste Disposal: Refer to Section 13.

7. HANDLING AND STORAGE

Handling: Never return unused product to the original container. Keep concentrate away from reactive substances. Prevent contact with organic materials. Keep product in original container.
Storage: Store this product in a cool, dry, well-ventilated area. Keep out of direct sunlight and away from heat sources. Keep product in original container. Use vented container. Never use metal containers or spigots.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Respiratory: NIOSH approved full-face respirator for excessive conditions.
Eyes: Chemical proof goggles/face shield for splash risk.
Hands: Protective gloves – chemical resistant
Skin: Body – covering clothing. Use aprons.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Clear, colorless liquid
Odor: Pungent
Freezing point: -30°C (-22°F)
Boiling point: N/A; product decomposes
Specific gravity: 1.09
Solubility: Complete
Decomposition temperature: Self-accelerating decomposition temperature >55°C (>131°F)
pH: 1.33

10. STABILITY AND REACTIVITY

Chemical Stability: Stable under normal conditions.
Conditions to Avoid: Heat, sources of heat, water/moisture, contact with combustible materials.
Incompatible Materials: Acids, bases, reducing agents, organic materials, metals, salts of metals.

11. TOXICOLOGICAL INFORMATION

Acute toxicity:
Oral route: LD₅₀ rat 330 mg/kg (1% solution).
Dermal route: LD₅₀ rabbit 1410 mg/kg (10% solution).
Inhalation: LD₅₀ 4 h, rat 4080 mg/kg (5% solution).
Chronic toxicity:
Dermal => 0.12% solution, irritating effect
Inhalation: => 3mg/m³, irritant

12. ECOLOGICAL INFORMATION

Toxic to simple cell and aquatic organisms. Danger to the environment limited; due to product properties. No bioaccumulation, soil degradation = 98% in 20 minutes. Considerable abiotic and biotic degradability. Sediments-non-significant adsorption. Weak persistence of degradation products. Degrades into water & oxygen.

13. DISPOSAL CONSIDERATIONS

Nonrefillable container. Do not reuse or refill this container. Rinse empty containers with clean water. Clean and empty containers are to be recycled or placed in the trash.

14. TRANSPORT INFORMATION

DOT Shipping Name: Organic Peroxide type F, liquid
Technical Name: Peroxyacetic Acid, Type F, Stabilized
UN Number: 3109
Hazard Class: 5.2
Subsidiary Hazard Class: (8)
Primary Hazard Label: Organic Peroxide
Subsidiary Risk Label: Corrosive
Packing Group: II

15. REGULATORY INFORMATION

TSCA Inventory List: Yes
CERCLA Reportable Quantity (RQ): Acetic Acid 3000 lbs.
Listed Substance: No
Unlisted Substance: Yes
Characteristic: Corrosive
Reportable Quantity: 100 pounds
NFPA Rating Health – 2 Flammability – 0 Reactivity – 3
Special – OX
HMIS Rating Health – 2 Flammability 0 – Reactivity – 2
PPE – Required
U.S. Federal Regulations: SARA TITLE III
SECTION 302 (Peroxyacetic acid) reportable quantities = 300 lbs, planning threshold 500 lbs.
SECTION 311/312 Acute Health Hazard, Reactivity Hazard, Fire Hazard
SECTION 313 (Peroxyacetic acid) reportable threshold: 1.0%, 1000000 (otherwise used (non-manufacturing/processing) 25000 lbs (manufacturing and processing))

16. OTHER INFORMATION

To the extent of our knowledge, the information herein is accurate as of the date of this document. However, neither BioSafe Systems nor any of its affiliates make any warranty, expressed or implied, or accept any liability in connection with the information or its use. The information is for use by technically skilled persons at their own discretions and risk. This is not a license or a patent. The user alone must finally determine suitability of any information or material for any contemplated use, the manner or use and whether any patents are infringed.

BioSafe Systems
CORPORATION

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Integrated Pest Management in ECE



INTEGRATED PEST MANAGEMENT TOOLKIT FOR EARLY CARE AND EDUCATION PROGRAMS
CALIFORNIA CHILD CARE HEALTH PROGRAM

INTEGRATED PEST MANAGEMENT IN EARLY CARE & EDUCATION PROGRAMS



Key Messages for IPM

- Prevent

 - Remove pest access to your building

 - Remove pest food, shelter, water

- Inspect

- Identify

- Monitor

- Manage using least toxic measures

Green Child Care is also Asthma Friendly Child Care



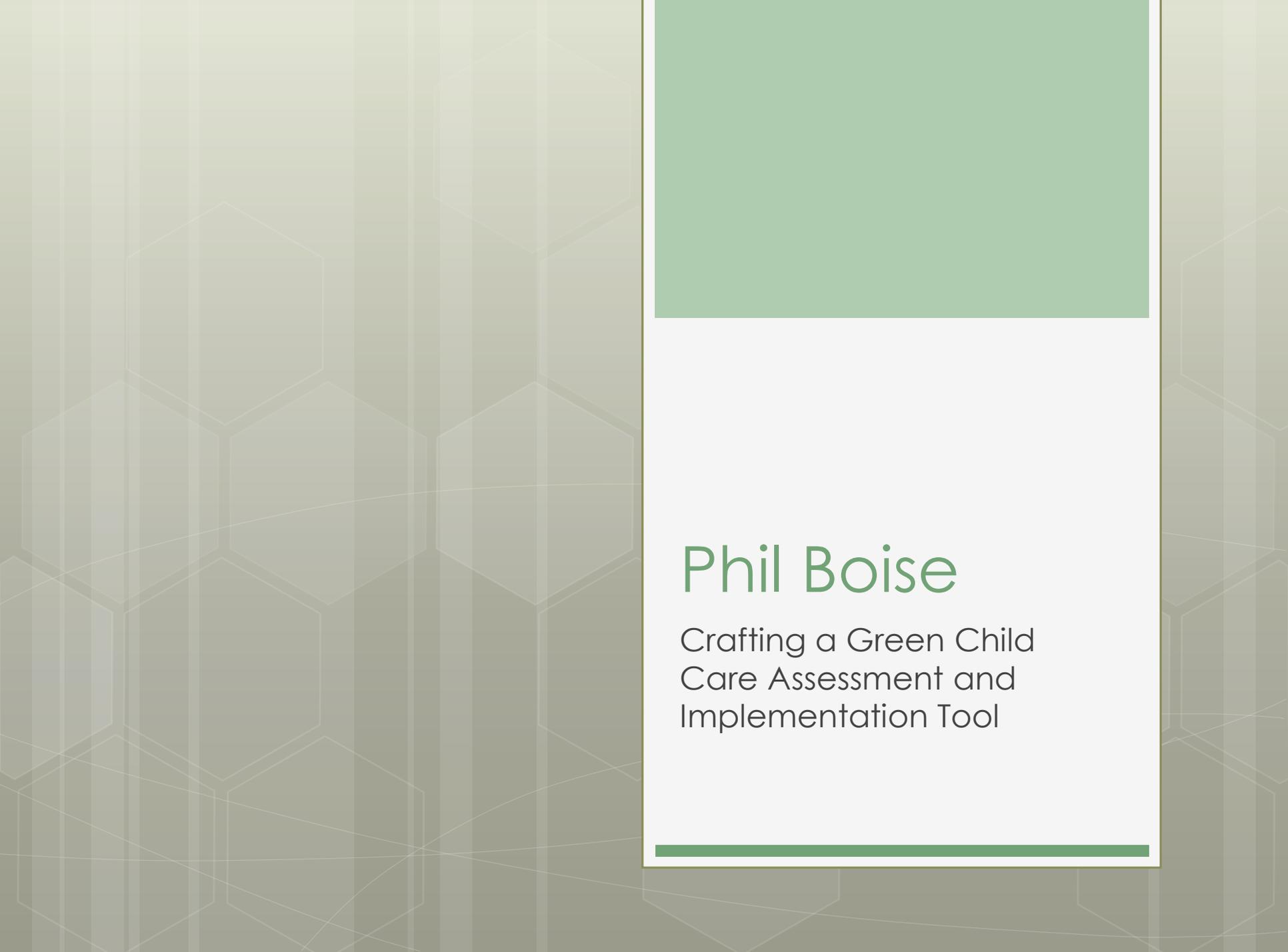
Resources Supporting Healthy Environments in Child Care

- Go Green Rating Scale www.gogreenratingscale.org/
- CERCH <http://cerch.org/>
- CEHN <http://www.cehn.org/>
- EPA Healthy Child Care <http://www2.epa.gov/childcare>
- EPA Design for the Environment <http://www.epa.gov/dfe/>
- Eco-Healthy Child Care
<http://www.ecohealthychildcare.org/>
- PEHSU <http://coeh.berkeley.edu/ucpehsu/>
- CDC Healthy Homes <http://www.cdc.gov/healthyhomes/>
- CCHP Health and Safety Checklist for Early Care and Education www.ucsfchildcarehealth.org
- Online Pest Management Professional Training on IPM in Child Care

Programs to Quit Smoking

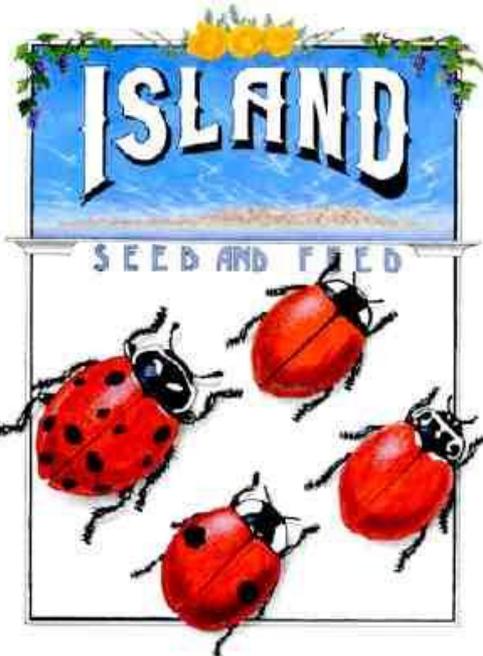
- [California Smokers Helpline](#)
- [1-800-NO-BUTTS](#)
- <http://www.nobutts.org/>





Phil Boise

Crafting a Green Child
Care Assessment and
Implementation Tool



Go Green Rating Scale
 PHIL BOISE
 for EARLY CHILDHOOD SETTINGS



GreenCare for Children

Measuring Environmental Hazards in the Childcare Industry:
 Pesticides, Lead, and Indoor Air Quality

Full Report

COMMUNITY ENVIRONMENTAL COUNCIL
 URBAN/AG ECOLOGY CONSULTING SERVICES
 JULY 2004

Protect Children

Early Care

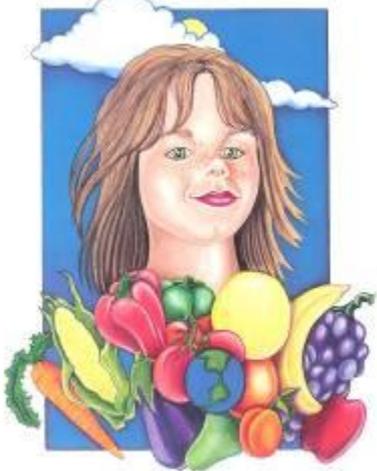
School

Home

Public Space

Food

INCREASING ORGANIC AGRICULTURE at the Local Level



A Manual for Consumers, Grocers, Farmers & Policy Makers

By Marisa Horan & the Santa Barbara County Safe Food Project Community Environmental Council

Green Gardener Training Program



40 hours
 1,000 students
 60% Spanish Statewide

Primary Curriculum Development:
 Phil Boise, Urban Ag Ecology Consulting Services

Editors:
 Alissa Jordan, City of Santa Barbara
 Lois Hochenstein, Santa Barbara County Water Agency
 Melissa Wiley, Santa Barbara County Water Agency

Translation:



PHAER Zones



PESTICIDE HAZARD AND EXPOSURE REDUCTION (PHAER) ZONES IN THE LANDSCAPE

A guidebook for schools, parks, childcare providers, landscape professionals and environmental managers.

Phil Boise
 Urban / Ag Ecology Consulting Services
 Gavista, CA

October 2004
 v 1.2



Reducing Pesticides in Schools

HOW TWO ELEMENTARY SCHOOLS GOT IT...
 COMMON PESTS UNDER INVESTIGATION
 PAPERWORK
 STRATEGIES

COMMUNITY ENVIRONMENTAL COUNCIL
 URBAN/AG ECOLOGY CONSULTING SERVICES
 JULY 2004

GreenCare for Children



GreenCare for Children

Measuring
Environmental
Hazards in the
Childcare Industry:

*Pesticides, Lead, and
Indoor Air Quality*

Full Report

COMMUNITY
ENVIRONMENTAL
COUNCIL,
URBAN/AG ECOLOGY
CONSULTING SERVICES

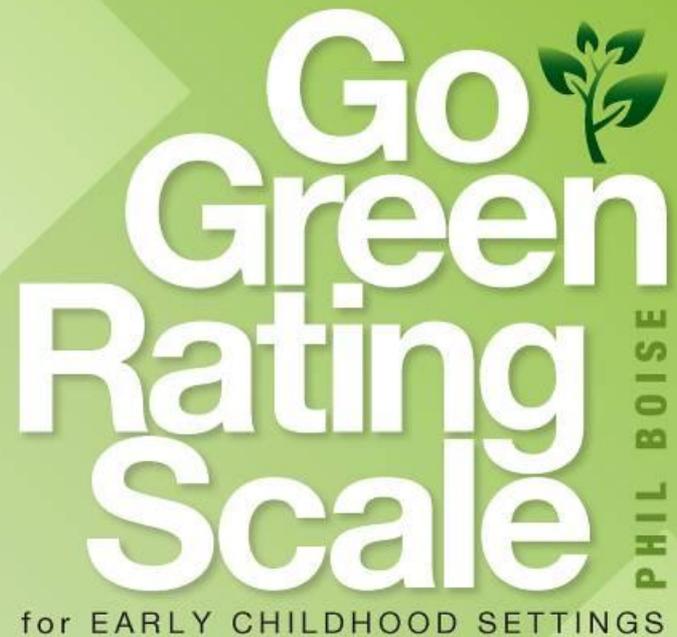
JULY 2004

- Established 2001
 - Help providers manage hazards
-
- Survey
 - 748 responses
 - 291 centers
 - 457 family

How

Regional

**National / International
Comprehensive**





Air Quality & Asthma Triggers

10) We have tested our facility for radon gas. Radon was not detected, or we have put in a radon gas reduction system to eliminate the hazard.

YES

Steps to Yes

Answer "YES" if everything below is true.

If everything below is not true, answer "Steps to Yes".

We tested the indoor spaces of our facility by using a 'do-it-yourself' radon test kit (available at local home improvement centers or online – see [Links and Resources](#) for inexpensive kits); or we had a professional test for us.

If radon was detected, we have mitigated the threat by installing a radon reduction system, such as a fan and vent pipe system to pull radon from under the structure and vent it to the outside.

Testing results are maintained on file.

Action Steps (if you checked **Steps to Yes**):

Checklist Challenges

- Technical information
- Limited 'yes / no' situations
- Measurable standards
- Compliance
- Portability

Go Green Rating Scale

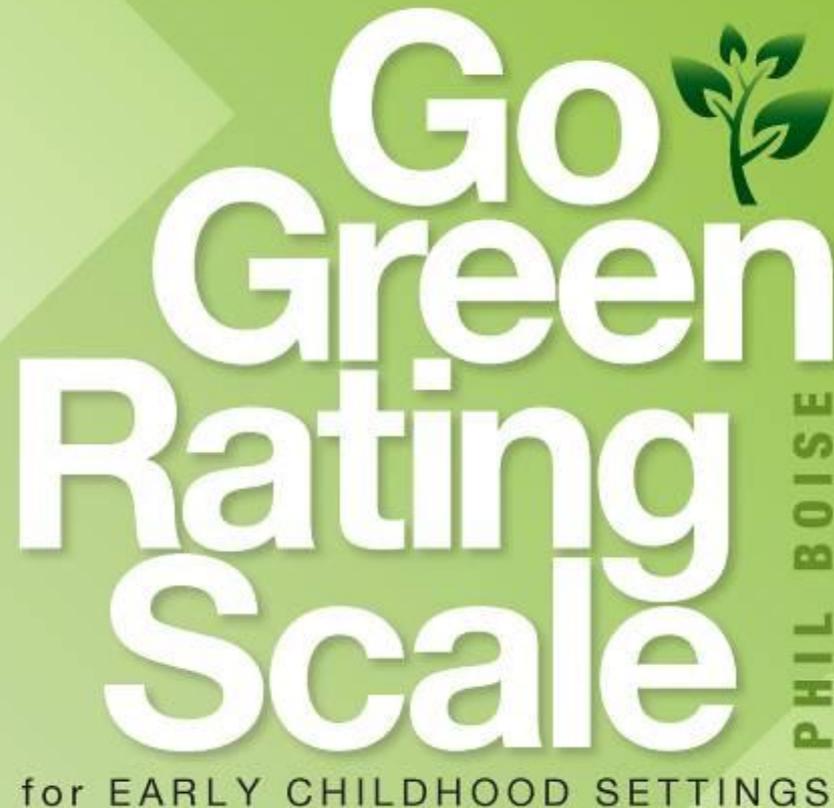
GGRS

- Redleaf Press

- First of kind

- Graduated leads to improvement

- Companion handbook



GGRS

Comprehensive

9 Sections – 43 Scale – 64 Guidelines –

311 Measures – 300 Pages

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10. CONSERVING WATER		SAFE AIR ZONES				
11. CONSERVING ENERGY		25. SAFE AIR ZONES				
12. GREEN BUILDING						

GGRS **- Tested**

Field tested: 28 sites, 15 states, 3 countries,
8 military bases, 5 family centers, 15 centers

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GGRS

- Compatible

Crosswalk with NAEYC / NAFCC / Head-Start / DoD

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GGRS

Reliability and Validity

- Exact Agreement

Go Green = 83%



With multiple raters, scores were statistically the same 83% of the time.

- Adjacent Agreement

Go Green = 93%

With multiple raters, scores were within one point of one another 93% of the time.

Leadership

- Vision of goals
- Community recognizes benefits
- Plan – organize, articulate, implement
- Measure progress

Why: Benefits

- **Economic incentives**
- **Market incentives**
- **Social incentives**
 - Peer recognition
 - Innovation / leadership
 - Quality
 - Healthier future



Ruby 
Reduce. Reuse. Recycle. 


MarBorg
INDUSTRIES

805-963-1852
com



Plastic

Paper

Aluminum



Coordinating Green Child Care Resources Locally

Kim Hazard

Alameda County Early Care
and Education Program

Greening Preschools “Phase I”

- Over 1,500 children know how to Reduce, Reuse, Recycle and Rot before starting Kindergarten
- 600 teachers received in-depth 4Rs training
- 56 preschool centers added or improved recycling and compost services
- 300 tons of waste diverted from the landfill
 - CO₂ from taking 180 passenger cars off the road!



Greening Preschools “Phase II”

- Green Ambassador Stipend
- Green Teams
- New Supports
 - Purchasing Policy and Guide
 - Green Business Program

**A.C.
Greening
Preschools
Program**

Recognition

**Food &
Gardens**

Facilities

**Green
Cleaning**

**General
Green CC
Resources**

Waste

Air Quality



Green Business Program

Recognition

Facilities

Food

Air Quality

AC
Greening
Preschools
Program

General Green CC
Resources

Green Cleaning

Waste

Thank You!

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 - kathy.tama@gmail.com
- Bobbie Rose
 - www.ucsfchildcarehealth.org
 - Bobbie.Rose@ucsf.edu
- Phil Boise
 - www.greencareforchildren.org
 - pboise.ipm@earthlink.net
- Kim Hazard & Ellen Dektar
 - http://acgov.org/ece/green_childcare.htm
 - Kim.Hazard@acgov.org
 - Ellen.Dektar@acgov.org