

E-WASTE RECYCLING: GLOBAL COMPARISONS IN OCCUPATIONAL HEALTH AND SAFETY AND POLICY

Aubrey Arain, Ph.D.

University of Michigan

March 20, 2019

WORKPLACE SETTING

GLOBAL E-WASTE WORKPLACE SETTINGS

THAILAND



CHILE



UNITED STATES E-WASTE WORKPLACE

[eCycle Opportunities](#)



UNITED STATES E-WASTE WORKPLACE



OHIO

Ohio Dad unwitting with lead

Author: Anne Saker, The Cincinnati Enquirer, WKYC
Published: 6:31 PM EST February 15, 2016



Contents lists available at [ScienceDirect](#)

Environment International

journal homepage: www.elsevier.com/locate/envint



The formal electronic recycling industry: Challenges and opportunities in occupational and environmental health research



Diana Maria Ceballos*, Zhao Dong

Department of Environmental Health, Harvard T.H. Chan School of Public Health, Boston, MA, USA

ARTICLE INFO

Article history:
Received 31 May 2016
Received in revised form 17 July 2016

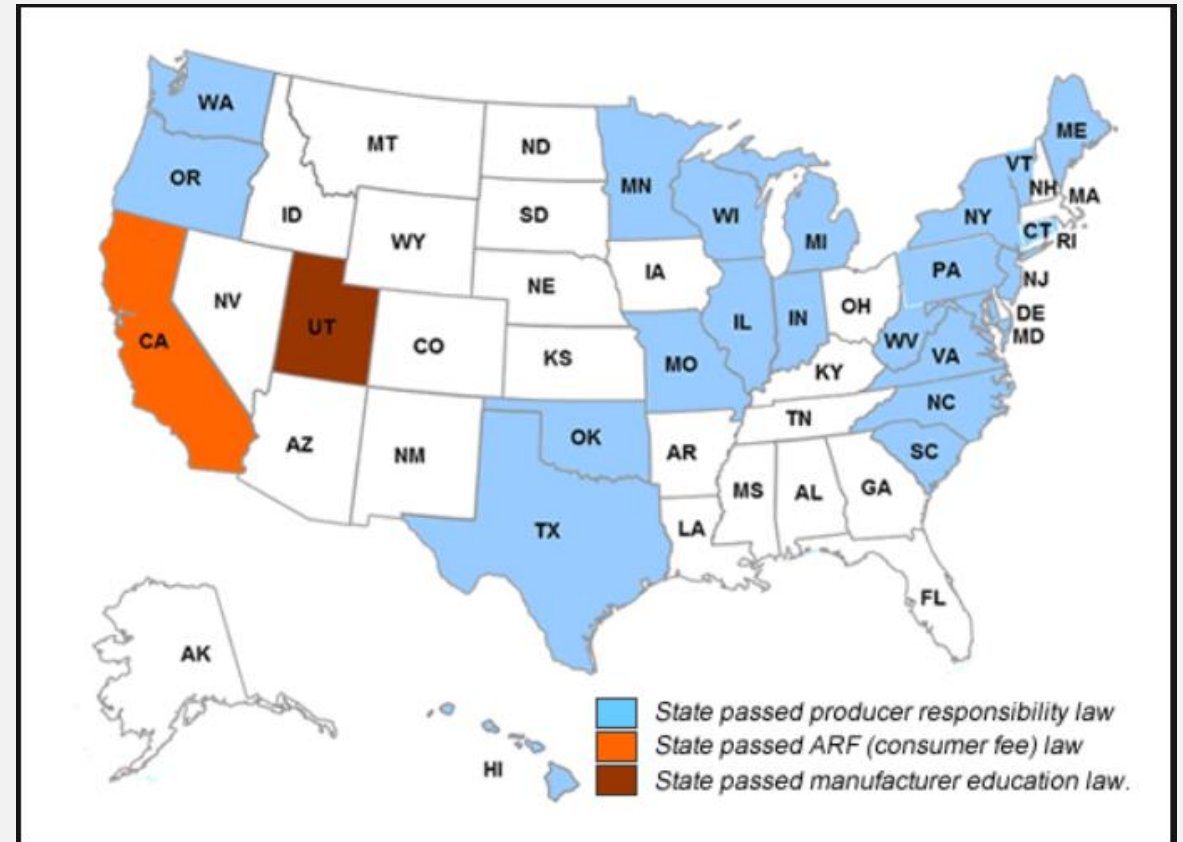
ABSTRACT

Background: E-waste includes electrical and electronic equipment discarded as waste without intent of reuse. Informal e-waste recycling, typically done in smaller, unorganized businesses, can expose workers and communities to serious chemical health hazards. It is unclear if formalization into larger, better-controlled electronics

US REGULATIONS

REGULATIONS

- 25 States have programs that regulate electronics recycling.
- Michigan has collection infrastructure and takeback law covering a handful of devices from residential and business sources.
 - Requires recyclers to be certified on data destruction, **worker safety**, and environmental regulations with DEQ.
 - Requires manufacturers to set up takeback programs.
- 3 voluntary certifications:
 - Recycling Industry Operating Standard (RIOS)
 - Responsible Recycling Standard for Electronics Recyclers (R2)
 - e-Stewards Standard for Responsible Recycling and Reuse of Electronic Equipment (e-Stewards)



E-WASTE OH&S RECOMMENDATIONS

- Biomonitoring to ensure compliance with OSHA's lead and cadmium standards; control lead exposures to keep worker levels below 10 µg/dL.
- Improved engineering controls to contain exposures.
- Hearing conservation programs.
- Respirator use when working with CRTs, batteries, etc.
- Behavioral and practical modifications: eliminate dry sweeping, uniforms and shower to reduce take-home exposures, locker and break room areas.
- Installation of proper work stations and tools to reduce ergonomic stressors.
- Worker education on materials, hazards, and how to reduce/contain exposures..