

Plastics Toolkit

2024



An Alliance for a
Healthier World



ABOUT SAFER STATES

Safer States is a national alliance of environmental health organizations and coalitions from across the nation working to safeguard people and the planet from toxic chemicals, and to ensure availability of safer solutions for a healthier world. Led by state-based organizations, the alliance seeks government and corporate action that lead to safer chemicals and materials, and protection of public health and communities by transitioning away from harmful chemicals and holding chemical polluters accountable.

ABOUT THIS TOOLKIT

The plastics crisis is a public health crisis. Plastic has a toxic lifecycle and waste management alone can't solve the plastic pollution problem. This toolkit provides resources, model policies and proactive solutions to address the plastic crisis from a human and environmental health perspective.

Safer States' comprehensive model policy on plastics can be found [here](#).

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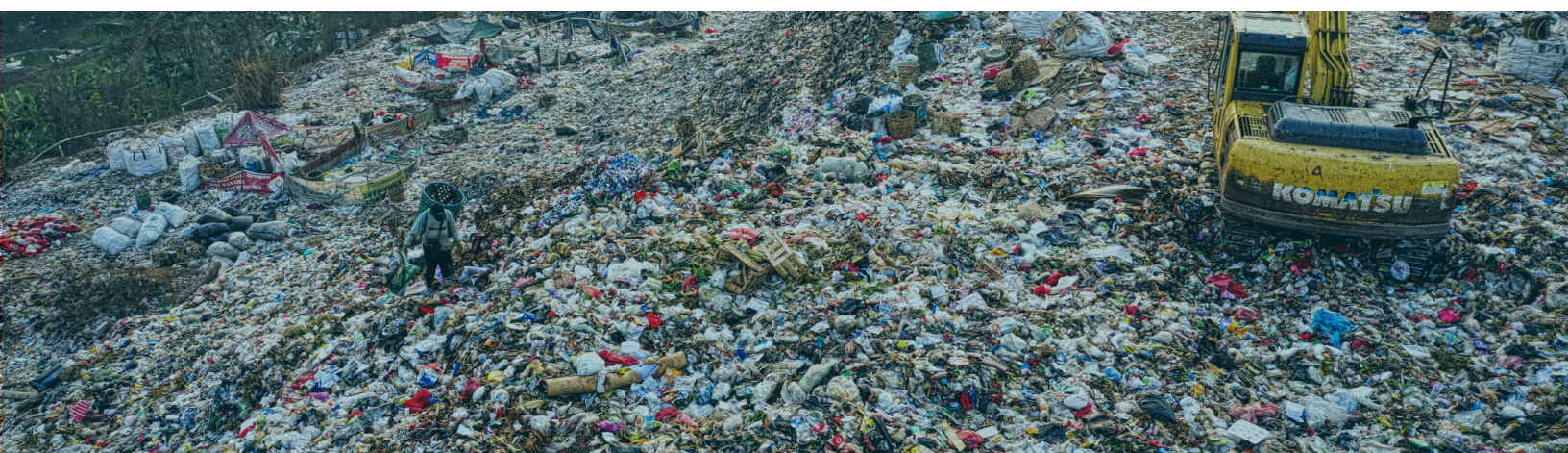
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THE PLASTIC CRISIS IS A PUBLIC HEALTH CRISIS

Fossil fuel-based plastics are contaminating the planet. This problem goes far beyond dealing with trash in the oceans. Plastic creates serious toxic impacts across its entire lifecycle, with low-income communities and communities of color most impacted. From the extraction and refining of fossil fuels, through manufacturing and use of plastic products, to waste management and disposal at the end of what is often a very brief product life, workers and communities are impacted by air and water pollution stemming from these activities. We are all exposed to the chemicals contained in everyday plastics, from the food we eat that is wrapped in plastic to the vinyl flooring in our homes. Over [half of all plastics ever made](#) were produced in the last 15 years and only [5-6% of all plastics](#) are recycled. The rest are landfilled or incinerated.

And the problem is only getting worse. As the energy infrastructure transitions toward more renewable sources, the fossil fuel industry is [shifting toward more plastic production](#). In fact, the Organization for Economic Cooperation and Development (OECD) estimates that left unchecked, plastic production is [set to triple by 2060](#). According to the [Center for International Environmental Law](#), if plastic production continues at its current pace, the emissions from this production could reach 1.34 gigatons per year—equivalent to the emissions released by more than 295 new 500-megawatt coal-fired power plants.

Since fossil fuel-based plastics are the primary use of toxic chemical additives, the increase in plastics production means increased production and exposure to toxic chemicals. In addition, there are over 10,000 chemicals used in plastics production, many with no information on their hazards.



The health impacts of plastic production, use and disposal are far-reaching:

- The [chemical](#) building blocks of fossil fuel plastic are associated with [health effects](#) ranging from cancer and neurological harm to birth defects, immune system suppression, reproductive harm, hormone disruption, [obesity](#) and asthma.
- [Toxic plastic additives](#) that are linked to endocrine disruption, cancer and reproductive harm can leach from food packaging into our food, escape into our water and indoor air and are [found in microplastics](#).
- Microplastics, microscopic particles of plastic that form when plastic breaks down into smaller pieces over time, enter the body by way of direct contact, [ingestion through food and tap water and inhalation](#).
- Many of the endocrine-disrupting chemicals that scientists have linked to a [sharp drop in sperm count](#) are common in plastic.
- Extraction of the fossil fuels that make plastic, particularly fracking, [releases toxic substances into the air and water](#), and chemicals used in extraction such as PFAS have known human health impacts.
- [All the ways we manage plastic waste](#) result in the release of toxic chemicals into air, water and soil.

We can't recycle our way out of the plastics crisis

The chemical and plastic industry makes the argument that we can solve the plastic waste crisis just by increased recycling. Yet since fossil fuel-based plastics are inherently toxic and require toxic chemical additives, recycling plastic will never address human health concerns related to plastic. In addition, there are [significant concerns](#) with plastics recycling itself:

- Plastic [cannot be infinitely recycled](#) like glass and aluminum. Making recycled plastic requires additional virgin plastic, and [plastic can only be recycled 2-3 times](#) before it degrades so much that it can't be used anymore.
- There are hundreds of thousands of [different compilations](#) of plastic material, each with its own additives, colors and stabilizers, which cannot be recycled together. For example, while you can recycle PET soda bottles together, you can't recycle them with PET clamshells.
- Plastic absorbs chemicals that it comes into contact with. Researchers tested recycled plastic and [found hundreds of different chemical compounds](#) including pesticides, pharmaceuticals, industrial chemicals and additives.

- Recycled plastic often struggles to compete against [cheap virgin plastic](#) which is only cheap because the fossil fuel industry receives direct government subsidies worth over [\\$16 billion annually](#).
- The plastic industry has confused consumers about what plastics can and cannot actually be recycled. In 2021, California [passed a law](#) prohibiting the use of the “chasing arrows” symbol on any product that isn’t widely recyclable in the state since the symbol appears on many products that aren’t truly recyclable.

Real solutions

In order to begin to address the health and environmental impacts of plastic and move toward a just, toxic-free, circular system that supports healthy communities and ecosystems, we need policies that:

- **Eliminate the [most problematic plastic materials & additives](#) and require transparency.** We need an increased understanding of what chemicals are added to plastic and how toxic they are, as well as policies that reduce the most hazardous plastics and plastic additives.
- **Promote source reduction and non-toxic reuse.** We need to eliminate the unnecessary use of plastic including single-use packaging and pair that with incentives and
- **Prevent false solutions.** We must take care to avoid toxic false solutions such as so-called “chemical recycling” or polluting disposal technologies. Minimum Recycled Content requirements are also touted as a solution to the plastics crisis but requirements to move toward non-toxic reuse and refill models that use safer materials.
- **Address microplastics.** We need more information on microplastics and strategies to address them.
- **Think critically about whether Extended Producer Responsibility (EPR) is right for your state.** EPR programs can do more harm than good if not designed properly, and even when they are designed well, they require significant time and resources from legislators and the NGO community to ensure proper enforcement and management.

SOLUTION 1: ELIMINATING THE MOST PROBLEMATIC PLASTIC MATERIALS, ADDITIVES AND REQUIRING TRANSPARENCY

- **PVC** (polyvinyl chloride) and **PVDC** (polyvinylidene chloride). Made from the carcinogenic compound vinyl chloride as well as other toxic additives and stabilizers, the manufacturing of PVC and PVDC also involves the carcinogen asbestos and/or PFAS. Vinyl Chloride is a known carcinogen and was responsible for the community contamination after the 2023 train derailment in East Palestine, Ohio. PVC and PVDC has a variety of applications in packaging including cling film, shrink wrap, thermoform containers, blister packs and bottle closures. PVC and PVDC are nearly impossible to recycle for many reasons, including the fact that different formulations contain additives that would be incompatible in recycled material. In addition, PVC and PVDC are expensive contaminants in the recycling streams of other packaging, can leak harmful compounds into the ground after landfilling, and when incinerated release highly toxic dioxins, furans and heavy metals. PVC packaging should be banned and replaced with non-toxic alternatives (where product redesign cannot eliminate the need for packaging altogether). While the US has been slow to phase out PVC packaging, [South Korea](#) has banned almost all PVC-based packaging, while [Taiwan](#) and [New Zealand](#) have banned its use in food packaging.

PVC/PVDC Resources

[*EU Report on why PVC Remains a Problematic Material*](#)

[*Toxic Free Future Report on PVC*](#)

[*The Perils of PVC Pipes*](#)

[*National Cancer Institute Report on Vinyl Chloride*](#)

[*Beyond Plastics on Vinyl Chloride*](#)

- **Polystyrene.** Made from the carcinogens styrene and benzene, polystyrene also contains harmful polycyclic aromatic hydrocarbons, some of which can cause cancer. Polystyrene is often used for packaging, such as loose-fill packaging “peanuts,” or polystyrene blocks, and foodware. Safer alternatives already exist for polystyrene packaging and several states including [Colorado](#), [Maine](#), [Maryland](#), [New York](#), [New Jersey](#), [Vermont](#), [Virginia](#), [Washington](#) and Washington DC have banned polystyrene in some types of food packaging. It should be eliminated from all packaging and should be replaced with non-toxic alternatives (where product redesign cannot eliminate the need for packaging altogether).

Polystyrene Resources

[*Center for Environmental Health Polystyrene Fact Sheet*](#)

[*National Toxicology Program report on Styrene*](#)

[*OSHA Report on Styrene*](#)

- **Polycarbonate.** Polycarbonate is used as a reusable material and has been held up as an alternative to single-use packaging and containers. While durable, polycarbonate is made using bisphenol chemicals including bisphenol A (BPA) and bisphenol S (BPS). Bisphenols are known endocrine-disrupting chemicals and even small doses of these chemicals have been linked to negative health outcomes including early puberty, cancer, reproductive toxicity and heart disease.

Polycarbonate/ Bisphenols Resources

[*International Journal of Basic and Clinical Pharmacology Report on Polycarbonate*](#)

[*Columbia Mailman School of Public Health Report on Bisphenols*](#)

[*Toxic Free Future Fact Sheet on Bisphenols*](#)

- **Melamine.** Melamine is also a reusable plastic material, frequently used in foodware, made from formaldehyde, a known human carcinogen. Formaldehyde can leach from melamine foodware, particularly when exposed to heat or acid. Some retail food establishments are switching to melamine-based foodware as an alternative to single-use items but this switch is not one that is recommended and could endanger public health.

Melamine Resources

[Health and Environmental Alliance Fact Sheet on Melamine](#)

[Study of Formaldehyde Migration in Melamine Cups](#)

[ScienceDirect Article on Health Impacts of Melamine](#)

- **Toxic Additives.** In addition to these problematic base materials, there are also many toxic additives found in plastic packaging. Harmful chemicals found in packaging have been linked to a [wide range of adverse health effects](#) including [cancer, infertility, low sperm count, birth defects, early puberty, immune system suppression and obesity](#). These compounds may be intentionally added to products, used during the manufacturing process, or may be contaminants from a variety of sources that end up in products. In 2018, the [American Academy of Pediatrics](#) released a statement warning about the dangers of toxic additives in plastic. Toxic additives include:
 - Perfluoroalkyl and polyfluoroalkyl substances (PFAS);
 - Ortho-phthalates;
 - Bisphenols
 - Halogenated Flame Retardants
 - Non-detectable pigments including carbon black
 - Oxo-degradable additives including oxo-biodegradable additives
 - UV 328 [2-(2H-benzotriazol-2-yl)-4,6-di-tert-pentylphenol];
 - Short-chained, medium-chained and long-chained chlorinated paraffins;
 - Benzophenone and its derivatives
 - Antimony trioxide when used as a processing aid in polyethylene terephthalate plastic
 - Formaldehyde
 - Perchlorate

Resources on Toxic Additives

[NRDC Fact Sheet on the Worst of the Worst Plastic Materials and Chemical Additives](#)

[IPEN Report on Toxic Additives in Plastics](#)

[UN Report on Chemicals in Plastics](#)

[American Academy of Pediatrics Statement on Toxic Additives in Plastic](#)

Policy Solutions:

- **Banning the worst plastics and toxic additives.** In 2022, a consortium of nearly 100 product manufacturers pledged to eliminate the most “problematic and unnecessary materials” including PVC, polystyrene, certain forms of PET plastic and some toxic additives in plastic such as PFAS. This pledge, called the [US Plastics Pact](#), is a voluntary effort to reduce the worst plastic and ensure that more plastic is recycled. While this pledge is a good start, it is voluntary and misses some key additives mentioned above. Safer States has created a [model bill](#) that would codify the voluntary commitments industry made in the US Plastic Pact as well as remove some of the harmful base materials and additives mentioned above from single-use and reusable packaging.
- **Transparency.** While scientists have some information about some additives used in plastics, there is much that is unknown. Understanding what chemicals are used and how they impact public health and the environment is an essential part of any sustainable system. Disclosure laws have proven to be effective in the past to identify and eventually eliminate harmful chemicals from other product categories. Washington state has been a model for how transparency is driving safer materials. Their law mandating safer products includes provisions authorizing state agencies to demand and receive information on harmful chemicals used in products. The [Safer States model legislation](#) includes provisions authorizing the disclosure of chemicals used in packaging and foodware to aid agency decision-making.
- **Authorization for removal of harmful materials and chemicals.** It is critical that state agencies have the authority to eliminate harmful materials or additives from packaging based on clear scientific evidence. Scientists continue to uncover concerns about existing materials and additives and the federal government’s policies have proven inadequate to address new and existing health threats from toxic chemicals and materials.

Additional Resources

[Safer States 2024 Model Packaging Reduction Policy](#)

[CIEL Report Plastic & Health: The hidden costs of a plastic planet](#)

[Health impacts on international recycling workers](#)

[Deep Dive into plastic monomers, additives and processing aids](#)

[IPEN Fact Sheet: Every Stage of Plastic is Toxic](#)

[Journal of Hazardous Materials overview of plastic additives](#)

[IPEN Plastic Toxic Additives and the Circular Economy Report](#)

[NRDC Fact Sheet on the Worst of the Worst Plastic Materials and Chemical Additives](#)

SOLUTION 2: SOURCE REDUCTION AND NON-TOXIC REUSE

Reducing the use of plastics, and moving toward safer, sustainable systems is the only true solution to the plastics crisis. To achieve plastic reduction, we will need a variety of strategies, starting with the phase-out of single-use plastics and packaging that are clearly unnecessary and wasteful. Single-use plastics are one of the world's most pressing environmental threats. [There is more single-use plastic waste than ever before](#). Most waste is buried in landfills, burned or dumped in waterways. The manufacturing process is also a major source of climate-warming greenhouse gas. Estimates suggest that about [half of all plastic material](#) is used once before being thrown away and [95% of all single-use plastic isn't recycled](#). More recycling is not the solution to this issue.

The only way to solve the plastic crisis is to make less plastic and move towards non-toxic reuse systems. Such systems would strongly incentivize and/or require the use of non-toxic materials that are designed for reuse. Using certifications that include evaluation of alternatives such as [Green Screen Certified](#) will aid in ensuring that reuse systems are using the safest materials possible.

Policy Solutions

- **Require Source Reduction of Plastic Packaging.** In addition to eliminating the most toxic plastic and additives, it is critical to reduce the amount of plastic packaging that is used in products. Reduction of 50% of plastic packaging materials within 10 years is the best way to reduce plastic waste and protect public health and the environment from the health impacts associated with plastic production.
- **Fund the transition to reuse.** Many restaurants, retail establishments and schools would more easily transition to non-toxic reuse if grants were available to aid in the up-front cost of the transition. [Safer States' model legislation](#) creates a grant program to fund the transition to safer reuse.

- **Require reusables in state buildings.** States can be leaders in promoting public and environmental health and combatting plastic pollution by implementing strong procurement policies that advance non-toxic alternatives to plastic products and other environmental objectives. Several states including [New York](#), [Washington](#) and [Connecticut](#) have established green purchasing policies. States can add to these existing policies or adopt new ones. [The Ecology Center](#) in Michigan has several resources for states and cities seeking to adopt sustainable purchasing policies. [Safer State's Model Plastics policy](#) includes language on mandating non-toxic reuse in state facilities.
- **Ban (or semi-ban) on single-use foodware accessories.** The US Plastic Pact has designated single-use cutlery, stirrers and straws as “unnecessary and problematic” if they cannot be recycled, composted or reused. This is a start but California has already gone much further and [has banned the distribution](#) of all single-use accessories and condiments for onsite dining and for third-party delivery unless requested by the customer (and slightly different requirements for drive-through restaurants). The California model is preferable to the language in the US Plastics pact. However, if states want to ensure any disposable cutlery is recyclable, reusable or compostable, the definitions of recyclable and compostable must be carefully crafted so as to reflect real-world conditions about what can truly be recycled in a state and require certifications such as those from the Biodegradable Products Institute to ensure that any disposable cutlery is disposed of responsibly.
- **Refill stations.** Many states require refill stations to be present and accessible in schools and in other public spaces. Good models for requiring refill stations include:
 - California’s law requiring refillable water stations at schools can be found [here](#).
 - California’s legislation requiring refillable water stations in state areas can be found [here](#).
- **Removing barriers to reuse.** In many states, there are unintentional barriers established in food safety regulations that prevent consumers from bringing their own reusable materials. California passed a law in 2019 removing these barriers and can be found [here](#).
- **Mandate reusables for on-site dining.** Some cities and counties have adopted such mandates including [Marin County](#), and [Cupertino](#). [Drafts are being introduced](#) elsewhere in California including San Francisco, Oakland and Los Angeles. A model ordinance can be found [here](#).

- **Single-use toiletries in hotels.** [Many hotels](#) are already transitioning away from single-use toiletries like shampoo, conditioner and lotion and installing refillable dispensers. A California law banning single-use toiletries in hotels can be found [here](#).

Additional Resources

[Safer States Model Policy on Source Reduction and Reuse](#)

[5Gyres Fact Sheet on the Problem With Recycling](#)

[Last Beach Clean Up and Beyond Plastics Report on Recycling Rates](#)

[Minderoo Foundation Plastic Makers Index](#)

[Upstream Playbook on Reuse](#)

[Upstream Model language on food packaging reuse](#)

[Upstream model policies on reuse in procurement](#)

[Just Zero Model Bill on Eliminating Single-Use Foodware](#)

SOLUTION 3: PREVENT FALSE SOLUTIONS. AVOID CHEMICAL RECYCLING AND RECYCLED CONTENT MANDATES.

So-Called “Chemical Recycling”

As public concern about plastic waste grows, the plastic and chemical industry is making the case that we can recycle our way out of the plastic waste problem. In particular, they are touting a false solution that they call “chemical recycling,” “advanced recycling,” or “molecular recycling.” However, investigations by environmental groups including the Global Alliance Against Incineration ([GAIA](#)), NRDC and Beyond Plastics have demonstrated that these technologies are not new, they are not “advanced,” and most of them are not actually recycling.

There are many different types of these toxic technologies including pyrolysis, gasification, solvolysis and chemical depolymerization. These can be broken down into two different categories: plastic-to-fuel and plastic-to-chemical components. In many cases, the chemical components produced may end up being burned rather than converted into new products, blurring the lines between the two categories. In any case, all of these technologies (1) use hazardous chemicals, (2) produce hazardous chemicals, and or (3) generate hazardous waste; all of them also pose serious environmental justice concerns. They also require relatively pure plastic waste feedstocks, limiting their use for post-consumer waste.

An [analysis done by the Natural Resources Defense Council \(NRDC\)](#) showed that of the eight “chemical recycling” facilities currently operating in the United States, the majority are not actually recycling plastic but rather are creating hazardous air pollutants and waste through plastic burning. Additionally, most of these facilities are located in low-income communities and communities of color. A 2021 [Reuter’s global examination](#) of so-called “chemical recycling” called the practice a failure.

[Beyond Plastics and IPEN released a report](#) in October 2023 confirming and expanding on NRDC's findings and demonstrating that chemical recycling is an abysmal failure. One of the facilities examined in the [Beyond Plastics/IPEN report](#) found that it generated one ton of hazardous waste for every three tons of plastic waste processed. The [Nordic Council of Ministers](#) (the official body for intergovernmental cooperation in the Nordic Region of the EU) released a report in September 2023 which concluded that, at best, chemical recycling will only recycle 3% of all plastic waste generated, and raised concerns about the potential human health impacts, greenhouse gas and toxic emissions, and discharges containing hazardous chemicals.

There is a concerted effort by the plastic and chemical industry to change state and federal law to [reclassify chemical recycling as manufacturing](#) and [exempting it from existing solid waste regulations](#). Solid waste management facilities are currently subject to more environmental oversight and reporting than manufacturing facilities. Reclassification can allow facilities to operate under looser air and water emission restrictions and/or have weaker requirements for community care such as not having to set aside money for cleanup after closure. Reclassified facilities could also allow for less public input and scrutiny when it comes to siting these facilities. The reclassification can also help the industry to gain access to additional funding and tax credits available to manufacturing facilities as well as to greenwash polluting technologies.

The American Chemistry Council has [stated](#) that they are *“actively trying to influence state and local governments and decision-makers to approve new plastic expansion projects, remove regulatory obstacles, and award public money or tax breaks to pass some of the needed investment on to taxpayers.”*

The plastic and chemical industry is also lobbying to change state laws to allow plastic-to-fuel and related schemes to be considered “recycling,” which comes with access to [tax credits and exemptions](#). Established federal and state [definitions of recycling](#) recognize that recycling means returning discarded materials to the production cycle to make new products. Recycling does not include processes that destroy materials, such as creating fuels or incinerating materials for “energy recovery” because destroyed materials can't be used to make new products.

Investors are beginning to question the efficacy of such technologies with Bleecker Street Research [releasing a scathing report of Pure Cycle](#) in Ohio stating that they would be shorting the company's stock due to its history of failure.

The [US Department of Energy](#) published a peer-reviewed study comparing mechanical recycling to “chemical recycling” and found that “mechanical recycling offers energy use and GHG emissions an order of magnitude lower than the other recycling technologies for all plastics, as well as low [waste generation], land use, toxicity, and water use.” Other key findings were that “the economic and environmental metrics of pyrolysis and gasification are currently 10–100 times higher than virgin polymers due to low yields of monomers suitable for repolymerization and high energy requirements” and “when assessed for environmental impact, current [recycling] processes outperform next-generation technologies.”

So far, [twenty-four states](#) have adopted laws allowing for so-called “chemical recycling” to skirt state government oversight and/or be provided with financial incentives such as tax breaks. States must reject these efforts and push back with laws that prohibit the practice.

Recycled Content Mandates

Some states have proposed requiring products and packaging to be comprised of recycled materials or to meet a certain percentage of recycled content. While well-intentioned, it is a false solution that will only result in more exposure to toxic chemicals. Plastic absorbs chemicals that it comes into contact with, including pesticides, pharmaceuticals, industrial chemicals, not to mention the additives that are intentionally added to plastic. All of these chemicals end up in the recycling stream and end up in recycled products. Researchers recently [found hundreds of different chemical compounds](#) in recycled plastic pellets. Recycled content mandates should be avoided, especially for food and pharmaceutical packaging.

Policy Solutions

- **Ban so-called “chemical recycling.”** [Safer States’ model policy](#) language includes provisions expressly prohibiting all forms of “chemical recycling,” defines “recycling” under state law as excluding “chemical recycling,” prohibits state incentives, and ensures that the regulated technologies will not count towards renewable portfolio standards (or similar state programs).
- **Avoid Recycled Content Mandates.** Better solutions include source reduction and toxics reduction.

- **Prevent so-called “chemical recycling” from being reclassified as manufacturing instead of solid waste management.** Re-classifying so-called “chemical recycling” as manufacturing would allow facilities to operate under looser air and water emission restrictions, reduce the amount of environmental oversight and reporting required and have weaker requirements for community care such as not having to set aside money for cleanup after closure. The plastic and chemical industry also want this shift because reclassified facilities could be sited in more locations and be subject to less public input during siting debates. The reclassification can also help the industry to gain access to additional funding and tax credits available to manufacturing facilities as well as to greenwash polluting technologies. Look for policies that include language that directly reclassifies or recategorizes plastic trash so it is considered “feedstock” rather than solid waste.
- **Reject policies that subsidize or incentivize technologies that are expensive, toxic distractions.** More than [\\$500 million](#) taxpayer dollars have already been channeled to fund projects that portray themselves as “chemical recycling,” but are almost entirely waste-to-dirty-fuel enterprises. Reject policies that provide bonds, loans, grants, tax credits, or other incentives to subsidize designing, building or operating facilities that claim to be “chemical recycling,” including those using pyrolysis, gasification, solvolysis, or depolymerization.
- **Reject public subsidies** for research and development for these technologies that have a [history of technical failure](#). We need to invest in real solutions to the plastic crisis instead.

Additional Resources

[Safer States Legislative Fact Sheet on Chemical Recycling](#)

[Beyond Plastics and IPEN Chemical Recycling Report](#)

[Bleecker Street Investor Report on PureCycle Facility in Ohio](#)

[NRDC Report: Recycling Lies - “Chemical Recycling” of Plastic is Just Greenwashing Incineration](#)

[GAIA reports on Chemical Recycling](#)

[Herald Star Column explaining the health and climate impacts of so-called “chemical recycling”](#)

[GAIA Fact Sheet on Chemical Recycling](#)

[DOE Study Comparing Mechanical Recycling to “Chemical Recycling”](#)

[Beyond Plastics Resource list on Chemical Recycling](#)

[Break Free From Plastics 2022 Plastic Burning Toolkit](#)

[Research on Toxics in Recycled Content](#)

[Unwrapped Project information on toxics in recycled food packaging](#)

SOLUTION 4: ADDRESSING MICROPLASTICS

Instead of breaking down in the environment, plastic tends to break up into tiny plastic particles called microplastics which are now an emerging health threat. Found in food, water, air, and the human body, microplastics can both contain toxic chemicals and absorb others in the environment. And the problem is getting worse. A recent [University of Hawaii](#) study found a "disturbing increase" of microplastics found in human placentas over 15 years. Moreover, many products contain intentionally added microplastics including cosmetics, paint, seeds and cleaning products.

Policymakers worldwide are beginning to address the growing threat of microplastics. While the ultimate solution for microplastics is to reduce the amount of plastic used and produced, there are some intermediate steps that are being taken including:

- [The European Union](#) has adopted a measure to ban all intentionally added microplastics from all products with staggered implementation dates for different product categories.
- California adopted a [microplastics strategy](#) including testing of drinking water and developing policy proposals to address microplastics in the environment.
- Market solutions to [catch tire wear particles](#) and [textile generated microfibers](#) have been developed but no jurisdiction has implemented them yet.

Policy Solutions

- **Develop and adopt a statewide microplastics strategy.** This can include:
 - characterizing environmental concentrations of microplastics
 - assessing their environmental and health impacts
 - investigating the major sources of microplastics
 - identifying ways to reduce harm to humans and the environment, including the potential development of drinking water standards
 - recommendations for key policy changes that will reduce toxicity and move towards better materials

[California's SB 1263](#) (2017-2018) is a solid model as it includes the above elements, but it is limited because it only considers impacts on the marine environment and is based on risk. However, it is noteworthy that the reports generated from this law look at impacts of microplastics beyond the marine environment. The law should be expanded to consider a wider set of environmental impacts and updated to adopt a more protective hazard-based framework (rather than a risk-based framework).

- **Require testing water and soil for microplastics.** Few states have tested their drinking water systems for microplastics, despite the fact that animals exposed to certain kinds of microplastics through drinking water show “[potentially adverse effects, including on the reproductive system](#),” as noted in California law. As scientists continue to investigate the potential human health impacts of microplastics and the toxic chemicals they both contain and absorb, it is important that more work is done to monitor the presence of microplastics in drinking water to better understand its occurrence and increase awareness around plastic pollution.
- **Adopt source reduction and toxic reduction policies.** Most microplastics come from the breakdown of larger plastic materials and the fewer plastics used, the fewer microplastics will be found in the environment. Similarly, if fewer toxic additives are used in plastic the microplastics they create will be less toxic.
- **Eliminate intentionally added microplastics.** While intentionally added microplastics are a small percentage of the total microplastics problem, it is common sense that these materials should not be added to products when they are unnecessary.

Additional Resources

[Safer States Model Legislation on Microplastics](#)

[State of California Report on the Health Effects of Microplastics](#)

[Greenpeace report on microplastics in sludge](#)

[ChemTrust Article on microplastics in sludge](#)

[Microplastics in clouds above Mt. Fuji](#)

[California's Microplastics Strategy](#)

[EU Restriction of Intentionally added Microplastics](#)

[University of Rhode Island study on health impacts of microplastics](#)

[Harvard Study on microplastics impacting vulnerable populations](#)



SOLUTION 5: THINK CRITICALLY ABOUT WHETHER EXTENDED PRODUCER RESPONSIBILITY IS RIGHT FOR YOUR STATE

The policy solution that has been touted most often as a solution to plastic pollution is Extended Producer Responsibility (EPR). The purpose of EPR is to make producers of plastic packaging shoulder the burden and responsibility of managing the resulting waste. However, if the policy does not include targets for plastics reduction or elimination of toxic chemicals, the resulting program will lead to a system that recirculates toxic chemicals, where recycled materials become contaminated, that only minimally impacts plastic production, and creates opportunities for industry to delay meeting required deadlines and targets. Most state EPR programs focus exclusively on recycling with either weak or no source reduction targets, no or limited language regulating toxic chemicals in packaging and no or limited reuse targets. Additionally, some allow for the false solution of chemical recycling.

An EPR program requires strong oversight by agencies as well as by advocates. These programs often take years to establish and require a multi-year investment of resources from multiple advocacy organizations to ensure proper implementation and continued proper functioning.

If a state's goal is to reduce packaging, reduce toxics, promote reuse and address microplastics, there are other policies that can accomplish all of these goals without needing an EPR program.

If states are moving forward with an EPR strategy, the following policy elements **MUST** be present in order to effectively reduce waste, and address toxic chemical threats, rather than just merely managing packaging waste and ignoring the larger issues at stake:

- **Strong source reduction requirements.** Some EPR policies only require increasing recycling targets and barely address source reduction. As discussed earlier, recycling will not solve the plastic crisis. The only way to solve plastic pollution is by reducing the amount of plastic that is used. Any EPR policy must have source reduction provisions that reduce plastic packaging by at least 50% over the next 20 years.
- **Toxics reduction.** As discussed above, many toxic chemicals are used to make and are added to plastics. Strong provisions should be included to eliminate the most harmful plastics and chemicals from plastics from EPR programs. This is especially important if the EPR policy includes recycled content mandates since toxic chemical levels can be higher in recycled content than in virgin material.
- **Bans on the worst plastics.** Since many EPR policies have recycling targets, eliminating plastics such as PVC and polystyrene is essential since these are highly toxic.
- **Banning false solutions.** It is vital that any definition of recycling in EPR bills expressly prohibit chemical recycling from being counted as recycling and ban so-called “chemical recycling” in the state. It is also important to reject recycled content mandates, particularly for any materials that will come in contact with food or used for children’s products.
- **Non-toxic reuse mandates.** As disposable packaging is reduced, requirements for manufacturers to transition to non-toxic reuse systems are critical.
- **State control.** The State Environmental Agency must set rules and fees, and oversee the program. Manufacturers should not control the program.

Additional Resources

[Model EPR bill](#)

[Beyond Plastics EPR Resources](#)

[Waste Dive Critique of EPR](#)

[Critique of Canada EPR for Packaging.](#)