



Alexis Temkin, PhD

How To Reduce Your Exposure To Toxic Chemicals

SUMMARY KEYWORDS

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Welcome to our session on minimizing exposure to toxic chemicals. I'm Professor Adams. And with me today is Alexis Temkin. She's a toxicologist with the Environmental Working Group. And that's one of the leading nonprofits in providing the public with information about toxic chemicals in common consumer products. Well, Alexis, thanks so much for joining us today.

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Thanks so much for having me.

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Alexis, can you first tell us a little bit about the Environmental Working Group that we nicknamed EWG and give us a little bit of an overview of the incredible amount of information that they provide?

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Yeah, absolutely. So ew g was started in 1993. And EWG's mission is really to empower people to live healthier lives in a healthier environment. And so what that looks like is research and

advocacy based organization that uses science to distill down what we know about environmental health, including how chemical exposures that might be present in our air, our



water, our personal care products, consumer products and our foods. So a lot of things that we cover, how those might be contributing to adverse health effects, and diseases experienced by the general population. And then what we do is create a lot of educational tools and advice that people can use to reduce their toxic exposures and improve their health.

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So great, they really provide a lot of tremendous information to the public, and we'll get into a fair bit of that as we talk, but maybe you could also begin by telling us a little bit about your personal background, education and your experience in toxic chemicals in the environment.

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Absolutely. So I joined EWG a little bit, two years now ago after I finished my PhD at the Medical University of South Carolina. And while I was working there, I was studying how environmental exposures particularly during early life, so pregnancy and development, how those can contribute to disease onset later in life. And I was specifically looking at metabolic diseases like obesity and diabetes. But our research group in general was very focused on reproductive harms, and other adverse health outcomes that you may experience from chemical exposure. So I've taken a lot of that knowledge and worked with EWG primarily reviewing different chemicals, either ingredients and personal care products, or pesticides that are found in our fruits and vegetables, and also tap water contaminants. Researching those data and the toxicity and doing assessments on them.

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That's really such a great background and really devontae to such a broad experience with love. Looking at these for a variety of different health issues. And so one of the most stunning studies of EWG was involved with was looking at toxic chemicals in the umbilical cord blood of infants. Can you tell us a little bit about that groundbreaking study and what they discovered?

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Sure. So, these were sets of tests, and studies that EWG did in 2005, and 2009. And they commissioned testing of like he said, cord blood. And the reason we were looking at cord blood was that it gives us an indication of what a developing child might be exposed to when they're in the womb or during pregnancy. So for a long time, it was believed that the placenta offered some sort of barrier protection from the developing fetus exposure to harmful chemicals. And, but that sense has sort of been debunked in the sense that when you measure cord blood for a variety of different chemicals and we looked at hundreds of them. We found numerous over hundreds of different industrial chemicals present in the blood of children who hadn't even been born yet. And among those were some very concerning chemicals that we found carcinogens,



neurotoxins, reproductive toxins. And since then bio monitoring and understanding what an individual person is exposed to has been really important and really instrumental in assessing the health effects associated with chemical exposure.

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So it's really very important for pregnant women to understand that whatever they're exposed to their infant is going to be exposed to that infant is probably even more vulnerable to the toxic chemicals exposures because they're still developing. Right. And so, can you tell us since chemical exposure is widespread in the US, what are some of the effects that it has on pregnant women and their children?

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Yeah, so you made a great point that it's really important to understand that children are more vulnerable and sort of developing during pregnancy is also this vulnerable window of development and a time to be concerned for chemical exposure. And there are a few reasons for that. So during development, we're really pre programming a lot of our biological processes and systems and organs that are important later in life. And during development, those processes can be subject to disruption. And chemicals are one way that that can occur and have effects later in life. So some of these can be neurological outcomes. So I think a lot of people are familiar with lead and it's associated with reductions in IQ. Pesticides have also been associated with different adverse behavioral and cognitive functions and neuro development. And another sort of organ system that becomes very important to focus on our reproductive outcomes. So You can see harmful effects in terms of fertility, puberty onset and general reproductive health. And another another area that we focus on is growth and development and from two different sides of the spectrum. So sometimes you may see chemicals influencing low birth weight or some sort of under development. And then a more recent development is looking at the sort of overgrip. So obesity and diabetes is a very active area of research in terms of how chemical exposure may contribute to contribute to that. And then lastly, or something that's also pretty relevant right now is looking at immune system toxicity. So, some very well known chemicals known as PFPPFA s are associated with reductions in vaccine response which may be make people more vulnerable to infectious diseases. And, and then lastly, thinking about chronic health cancer is also an outcome that We're concerned about with exposure in early life.

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So really, in general, I think it's fair to say that the chemical exposures we have can affect every organ in the body, every cell in the body some differently than others, but the brain, the heart, the lungs, all the body is at risk from chemical exposures.



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Yeah, and there are differences in terms of when exposures occur, what chemicals you're exposed to, and for how long that may influence, you know, which of those sort of disease trajectories or health outcomes may develop later in life?

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Absolutely. So let's talk let's begin talking about air. What are some of the common toxic exposures in air? And what can we do to try to minimize those exposures?

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Sure, so I actually think one of the most interesting things when we talk about air pollution is that a common misconception is that indoor air is not necessarily polluted or that our outdoor air is really all we have to worry about. Because you think have, you know, smokestacks industrial pollution, which are very important, especially if you live, you know, near industrial sites or in large cities where you have more air pollution from cars, vehicles, transportation, manufacturing. But our indoor air environment is also extremely important and where we spend a lot of our time, whether it's in our homes, or you know, in our offices. So I think one of the first things about air pollution is to just be educated about that fact and understand that your indoor air is something that you also need to worry about and what could be contributing to that air pollutant pollution. So we often think about building materials and plastics that may be present in the home carpets and can be treated with certain chemicals that can then get into indoor dust and be a source of exposure, and the cleaning products that you use in your home. And then also what type of stove you have all can contribute differently to your indoor air pollution.

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Yeah, so all very important factors. So if you're building a nursery for the new infant may not want to put new carpeting and new paint in there, or if you do you want to be very cautious about the products that you use. Okay? And then what is you EWG recommend for water and to clean water.

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So EWG has been working on water for a while now and we have a wonderful resource called EWG tap water database. And what we've done with this database to create it is take EPA testing of different public water systems within the US and collate all of that data into a searchable database, so that an individual can take their zip code, enter it into the top water database, and they'll be returned with a list of contaminants that are present in their drinking water, what levels they're found at and how that relates to health standards, that EWG has reviewed the data and indicated what may or may not cause harm at what level. So you can



see your contaminants and compare them to those those levels, see if they're above or below the EWG standards. And then we also offer tools for water filtration and educating people which types of water filters will remove which types of chemicals.

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So in general, they can go to your website and see what are some water product, some water filtration products, that would be reasonable. Any thoughts about reverse osmosis?

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So in general, reverse osmosis will be the type of water filter that will remove almost everything that's present in your water. It also often comes at a higher cost. And so you'll see that there are also some chemicals that can only be removed by reverse osmosis. And in that case, that may be a choice that somebody wants to make for their family, but in other times, comic and Tamminen like disinfection byproducts are something that you'll see in most of our major city water systems. And because appropriate. disinfection is really important for drinking water safety, but you're often left with some chlorine byproducts. Those can be pretty much effectively removed with a carbon activated filter, which is you know, something that's present in your type of tap pitcher or countertop filter.

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Right? So a charcoal filter might be very good. A limitation of reverse osmosis is it does remove a lot of essential minerals as well calcium and magnesium. So if you do have a system like that you might want to consider systems that allow you to add in back some of those essential minerals that are in drinking water. And what about the benefit of organic foods? What do you think is the importance of organic foods and the importance of maybe just washing your vegetables as well?

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Sure, so um, when it comes to food consumption. We know that synthetic pesticides are used on conventional food in this country and abroad. So one thing that we know about switching to an organic diet or consuming organic foods, and we know this from intervention studies is that you can rapidly reduce your exposure to synthetic pesticides pretty quickly. So within a matter of days, when we look at studies for people that have been eating a conventional diet, and then switched to an organic diet, and you actually measure the level of those pesticides in urine, for example, you see a pretty immediate decline. So the one thing is that we know organic food can reduce synthetic pesticide exposure. And several synthetic pesticides, such as organophosphates have been associated with adverse neurological outcomes in children, as well as fertility or sort of difficulties getting pregnant in women and men. So those are some



Some of the reasons why we think organic food is a good choice during pregnancy and childhood and rinsing fruits and vegetables is interesting. So we know that washing fruits and vegetables will reduce some pesticide levels, but not all of them. So the USDA actually tested test fruits and vegetables every year. And the way they do their preparations is to mimic sort of consumer wood. So they wash their vegetables, they peel them and then they determine what levels of residues are, are present on fruits and vegetables. So, so it does reduce them and that's important, but not all pesticides.

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Right? So go organic if you can, especially during pregnancy, but if you can't afford that, then washing fruits and vegetables still gives you some benefit.

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Yes, and we also I noticed probably something we'll talk about at some point is EWG's created a list of Dirty Dozen and clean 15 to help address this, this issue specifically of highlighting the vegetables and fruits that are most contaminated, so which you would want to focus on buying organic as possible, and then the clean 15 which are the least contaminated and can be purchased conventionally without a high level of risk for synthetic pesticide exposure.

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And what's great is that EWG even has an app for that so that way you can take that list with the the grocery store, and know where the foods that are most important to get organic. I think often a good summary is that often it's berries especially, will tend to have high levels of toxins on them, but certainly many other fruits and vegetables too.

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Absolutely. The Greens are another option. So spinach and kale tend to be on the Dirty Dozen list pretty high. And I think they're in the number two and three spot in the last two years.

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Yeah. So very great that you continue to update that every year. Um, and also I think it's So important, as you mentioned, for women to realize that just within a few days of going organic, they're going to have much lower pesticides coming out in their urine, and presumably much lower exposure to their developing infants. So it's never too late to start. Can you also talk about other ways to reduce toxins and foods? So we think about when cooking for example, and if foods become burnt and charcoaled concerns about toxins, there concerned about toxins in the skin and fish can talk a little bit more about those.



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Yeah, absolutely. So um, as you mentioned, fish can be a source of mercury exposure particularly and heavy metal exposure. So we also know that eating fish during pregnancy are is important for normal development and good development. So we similarly have sort of developed guidelines based on fish that are low in Mercury, but will give you a nutritional source that you typically would get from fish. So that's something that women can look to to incorporate fish into their diets during pregnancy but not necessarily have the risk of heavy metals. And something else that I think about when we think about toxins in food. So, similar to pesticides, these are intentionally added ingredients. Because of certain food packaging, you can also have the presence of non intentionally added ingredients in food. So, we often would recommend choosing fresh items whenever possible. For instance, plastics may have BPA or solids present in them that can unintentionally migrate into food. And another class of chemicals p fast people may have heard of PFOA and PFOS can be present in paper and board. And that is another source of contamination to these these chemicals in the presence of them and food.

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Yes, well It's fair to say that crashes is often best. Frozen is a good second choice can probably a distant third. And coming back to fish, I think it's so important for people to realize it's not to stir recommendations but also even the FDA now recommends that pregnant women avoid even one serving of shark, one serving of sort fish during the entire pregnancy. Because those fish are so high in the food chain, they get so contaminated with mercury and even tuna fish, although it's lower Mercury, people tend to eat so much of it. So as you say, fish is a great foods filled with protein filled with good omega three fatty acids. You want to go with low mercury fish like salmon and others and definitely avoid shark and swordfish. Okay, any other thoughts on food preparation? We mentioned trying to minimize burned foods, charcoaled foods, grilled foods because of concerns there. Any other thoughts on

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I think just as you said, to emphasize that those types of foods can create certain the presence of carcinogenic contaminants in the foods and that avoiding that type of cooking process can help reduce that type of exposure.

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Sure. So let's move on to cosmetics and personal care products. It's a very important issue. Ew G has done a lot of research on that. Can you tell us about recommendations for women on cosmetics and personal care products during especially during pregnancy?

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Yeah, absolutely. So I think a common theme with sort of a lot of what wg works on and puts



out there is helping people get educated about what they're currently using, whether it's what's present in your current water, your water source, or what cosmetics are part of your normal routine. So ew G has our skin deep database where we have reviewed Hundreds of thousands of different chemical ingredients for their toxicity and rank them on a scale of one to 10 based on whether they have the presence of endocrine disrupting chemicals like parabens and phthalates, which can be harmful to the developing fetus and to reproductive outcomes and whether or not they have the presence of certain carcinogens, allergens, sensitizing allergens, which may be really important during at a young age, if they're used, you know, in baby wipes or something like that. So, we have this database where women can look at what they're currently using and see how it ranks and then also offer alternatives that may have a more a safer profile. In general, a few things to avoid if you are just sort of looking at the back of labels of cosmetic products. fragrance is a term that is not well defined in the cosmetics industry and can often contain hundreds of different ingredients. So we would say avoid looking that term fragrance if you see it without any declaration of what is in there. I mentioned parabens. They are preservatives that are been used in different chemicals and have estrogenic activity. formaldehyde releasing preservatives, formaldehyde Mino is a carcinogen and also a sensitizer. And they can be present in different preservatives. And hair dyes in particular, can also have some pretty nasty chemicals in them like phenol and dye mean

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that people in general would want to avoid during pregnancy.

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So really try to minimize reduce use of cosmetics and be very cautious about which ones you use. One of the reports I've heard is that for lipstick, for example, up to 50% of lipsticks at one time contain LED, and of course you're getting some of that into your body and I think that was such an eye opening. fact that was when people realize that and so just I think because I'm more aware of those personal care products is very important. Ew G has just done a great service. So you can just look up what you want to use. And and look at the rating of it. Oh,

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sorry, go ahead.

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I was gonna say we also we also have a program called ew g verified where we have, you know, sort of standards that go beyond beyond just reading chemicals, you know, and ensure that, for instance, any heavy metal contamination right is below a level of concern. So that's another place. If people just want to look at something that's been vetted, sort of by our scientists. That's a place that they can go.



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Yeah, so looking for that ew g verification is I think, very important. Um, what about workplace exposures that, um, can you talk a little bit about what are some common workplace exposures to be concerned about?

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Sure, so so I think for certain occupations, there's obviously going to be very different exposures. And if you're Working with any type of hazardous chemical, for instance, that proper, you know, protection and making sure that your employer is sort of working by the correct standards is really, really important. And in general, I think kind of workplace exposures to think about them the way you would your home exposures. So for instance, your indoor air in your office is also going to be very important the materials that you're exposed to during the day your water source. So I think using the steps that you would take at your home and your workplace are very important. And also, for instance, you can work with perhaps your company or sourcing manager, you know, on materials that you're using cleaning products that are being used in your office, etc, that, I think it's just to know that you spend a lot of time there and think about that.

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Yeah, very good point. And then talks about how much exposure one of the things we've suggested people because as you pointed out, indoor air quality is often worse than Outdoor, then just opening the windows opening the doors once or twice a week, we think is a good way to help clean that out. And then also having a very good heppa filter system in your air to try to remove any particles that are in the air. So I think that combination of is probably a good approach. But what are your thoughts? Any additional things do try to consider to reduce indoor exposure certainly mentioned cleaning products at work. So maybe we should talk a little bit about cleaning products at home as well.

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Yeah, absolutely. So and, as you mentioned, proper ventilation, I think in general is something that people can don't often think about, but it's kind of an easy way to help indoor air quality whether that's during cooking, which is extremely important. So using you know your fan that is typically above your, your scope, if that's not an option then to make sure that you have an open window or you're getting denied During those times, cooking can create a variety of harmful gases that an individual can be exposed to and particulate matter. And additionally, similarly to what you mentioned, ventilation will help reduce volatile organic carbons or compounds which can come from off gassing of different you know, so paints or carpets or materials. So we mentioned this during, if you're renovating to make sure that you're picking ones that are low in



voc and typically water based and ew G has a healthy home guide that can help with that. So cleaning products, right, these are things that we use in our home and can be left in residues can be found in dust. A lot of the presence of certain disinfectants has also been associated with asthma. Something that we know is really important for children's health and something that's on the rise. So eg similarly to our skin deep database, we have a guide to help Where we've also ranked and cleaning products and ingredients that individuals can use to sort of help find those that are low and voc content, do not have harmful disinfectants that are present in them. And use those as sort of alternatives for for when they're cleaning in the home.

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We'd like to mention one or two examples of good cleaning products that you would recommend

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good types of cleaning products.

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Yeah, I mean, so we we break everything up into what type of category you're looking for, whether it's an all purpose cleaning product, or a floor cleaner or laundry so people can really go in and look at what ranks the highest and what's going to sort of suit their needs and be the best option for them.

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Great. Great. And then on Can you give us the ew g website where families can go for more information?

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Sure. So ew. g.org is where you're going to find everything that we have. We all have recently launched just a children's health site in general, that has more focus towards parents and pregnancy. And a lot of our tip sheets are available there for people to use.

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So again, ew g.org great source for a lot of information, Lexis, we've covered a lot of different points. I thank you very much for all your insight. there any major highlights of anything, we've discussed anything you think that's especially important that you'd recommend to a woman who's considering becoming pregnant or high already pregnant that we'll never be able to eliminate all exposures? If we can just reduce them somewhat, that can be very helpful. So what do you think are some of the most critical, practical steps that people can take to reduce their overall chemical exposures?



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Yeah, absolutely. So I think the first thing that you brought up really is the most important point is just to start small, to pick something that is manageable and attain For you, whether that is changing your diet, switching to organic to reduce pesticide exposure, maybe the easiest thing, or changing eating habits in terms of less food packaging, less plastic materials are really that. It's up to you. It's your choice, what makes the most sense for you, and we're going to be with you every step of the way to sort of help with that process.

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Great. Great. Well, thank you so much. It's been very informative, and I really appreciate you joining us.

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Thank you so much.

