Dermatologically Tested Podcast - 14. Environment and the skin with Dr Rachel Abbott & Dr Misha Rosenbach

Matt Gass 0:14

Welcome to dermatologically tested, the podcast of the British Association of Dermatologists. So, this week, we've gone big, and we've gone international, we'll be talking all about skin and the environment. So, obviously with this absolutely enormous topic, we've got a huge amount of ground to cover. So, it's probably best that we just get introduced to our guests straightaway, Harriet, I'll let you do the honours.

Harriet Dalwood 0:34

Hi, everyone. So today we're going to be talking about dermatology and the environment and we have with us today, Dr Misha Rosenbach, associate professor of dermatology and internal medicine at the Perelman School of Medicine at the University of Pennsylvania, and Dr Rachel Abbott, a consultant dermatologist with an interest in environmental issues around dermatology. Welcome both.

Dr Misha Rosenbach 0:56

Thank you. It's a pleasure to be here.

Dr Rachel Abbot 0:57

Thank you very much for having me.

Harriet Dalwood 0:58

Right. I guess we'll get stuck straight in. If Matt, you want to take it away with the questions.

Matt Gass 1:04

Fantastic, Misha, I'll come to you first. If you don't mind. Perhaps you could outline in broad brushstrokes, the link between the environment and the skin and why it's an issue that we should all care about?

Dr Misha Rosenbach 1:15

Yeah, so that's a great question and honestly, I mean, I could probably go on with a really long answer. I do want to make sure that we keep this as a dialogue. But I would say it depends on a couple of different categories. So, you know, the skin is basically our largest external organ, it wraps up our whole body and so the skin sits at the skin environment interface. And so you can have impact from the environment on the skin in terms of skin diseases that are influenced by things in the environment, you can also have issues or impacts on the environment from things we put on our skin. So, like creams, topicals, cosmetics, sunscreens, and then you can also think about the skin as an organ that impacts the rest of the body. So, you know, the skin sort of helps with thermo regulation or temperature regulation through sweating. And so, you know, we don't necessarily think about heat related illness and heat stroke is like a dermatologic disease. But as temperatures go up, you know, people need to be able to acclimate or accommodate to that with maintaining

their body temperature. And in some areas, we're seeing real issues with heat related illness. There have been some massive heat waves in Europe. But also, of course, in areas like Sub Saharan Africa, Pakistan, India, where people are not equipped to live in certain temperatures. And you know, I don't know if you count that as a dermatological disease. But it certainly is a skin environment interface. But most of our work is focused on dermatological diseases that are changing as we're witnessing rapid climate change and some of the impacts across the globe from extreme weather, migrations of vector patterns and illnesses and things like that.

Harriet Dalwood 2:53

You kind of touched on this but, does climate change impact the occurrence of certain dermatological conditions? You said that it's happening in certain countries more so than others. Why is this? I assume it's because it's the hotter places in the world.

Dr Misha Rosenbach 3:06

Yeah. It's interesting, because, you know, what we're seeing with man-made climate change is very rapid changes in the environment. The Earth has been here for billions of years but we've had a fairly stable amount of co2 and greenhouse gases in the environment, over all of human civilization up until the industrial revolution, where the rapidity of rate of rise of co2 particular matter and other greenhouse gases, means that we're forcing changes across the globe very rapidly, more than biological or natural systems can acclimate to or evolve in response to, and that's when people talk about tipping points and ice sheets and ocean rise and heat rising and changing pH and acidity of the ocean.

Those are all happening very rapidly. And there's also globalisation where there's much more interconnectivity across the globe, where we see people and populations from different areas, kind of intermingling in different ways, then, maybe 1000s of years ago, would have happened, obviously. And so, you know, all of that means that we're seeing different things in different areas. But what happens in different areas doesn't necessarily only impact those areas. And so, for listeners, I don't have an amazingly brilliant sounding accent like you. I'm here in North America in Philadelphia. And so Philadelphia is the Lyme capital of the world where we have the most cases of Lyme disease here in the state of Pennsylvania. I mean, if you look at like a CDC map of Lyme disease for instance, Lyme is a disease carried by a tick called the Ixodes tick that normally lives on deer and it doesn't do very well in cold and so usually we see tick bite season in like spring and summer into maybe early fall. But as we have more warm temperatures over the summer, and an expansion of the warm seasons, spring happens earlier, and summer happens earlier. Fall is warm later and with more mild winters we're seeing ticks biting earlier in the year and later in the year.

So we've expanded the time range of when people can get exposed to these ticks and get Lyme. But also, as the world is warming, we're seeing expansion of warm temperatures marching up onto more and more northern latitudes. So, we normally see ticks in kind of this Mid Atlantic and New England region. But now there's Lyme disease happening in Maine, which is one of the northern most states and in parts of Canada, where 10 or 15 years ago, dermatologists and physicians there were never used to diagnosing Lyme. And so what that means now is that people who didn't expect to see Lyme for their whole career, having patients present with Lyme, but maybe having delayed diagnoses or missing those diagnoses, and that's a really digestible nugget example of things.

There are different conditions in different areas of the globe, and different manifestations in different regions and it really, I mean, we could go on and on where you could talk about crop failures and rural to urban migration and civil unrest, leading to migration of displaced populations,

and malnutrition and skin issues and obviously, other issues from from all of those things. So, if this is one of those things, where when people talk about climate change as an existential threat, they don't mean like a Kafka novel where you're thinking about existentialism, they mean, it really changes sort of the existence and there's been a phrase called climate change as a threat multiplier, where it makes everything that there is that's bad, worse, and makes new things that weren't bad and two problems. I think we could rattle off probably 20 Derm diseases, or skin issues alone.

Dr Rachel Abbot 6:39

Yes I mean, this is it, it impacts, I suppose, traditionally, we always thought about global warming, but that's really changed now thinking around that it's more global change, climate change. So, we're seeing these extreme weather patterns. So, it's not that where I live in Wales, it's suddenly going to become like the south of France, which would potentially be quite an attractive proposition. But we're certainly seeing more flooding episodes over recent years than we have in the past and it's the impact on every type of skin disease. So inflammatory skin disease, infectious skin disease, and then with skin cancer as well, which is more my field, it has the potential to impact on any skin disease, really, that this change and this disruption, anything that disrupts civilization is going to have an impact on health. Unfortunately, in high income parts of the globe, where we tend to have higher carbon footprint per person and it's perhaps our behaviour in these parts of the globe since the industrial age that have caused a lot of these greenhouse gas emissions.

Unfortunately, they're disproportionately affecting low-income parts of the world that are still on this industrialization journey. This is why it's such a huge geopolitical problem. Should those of us that have benefited from industrialization be now basically paying those countries that are wanting to go down that path to not go that down that path for the health of the planet. There is some good news, which Prof Anthony Young discussed at the RSM and I was so pleased, because I like good news, because we know that the global community did come together to introduce legislation to tackle depletion in ozone, which we think because potentially raising the UV index in certain parts of the globe, leading to potentially higher skin cancer rates, and this has worked. So, this is fantastic, and so we have done this before as a global community. There is hope that we can do this again, but obviously, there's been huge disruption because of the COVID 19 pandemic over the last year and so focus is somewhat shifted. There is a movement and I think it's sort of come to health care a little bit late, I think, Misha was on the ball faster than some of us. But I think what we're realising is that we're contributing to the situation in healthcare.

Healthcare has been excluded from most regulation around carbon emissions in most countries in the past, but I think now as health care organisations are realising that we don't have the option of being excluded, we're part of the problem, and we really need to get our own house in order and so a lot of the things we were doing at home, I suppose this is where my interest came from a few like, I was trying to lower my carbon emissions in my personal life and then I was coming into work and operating on patients with skin cancer with single use packs, single use instruments and everything was going to the incinerator afterwards and considering we cut out about a quarter of a million skin cancer in the UK annually, that is an awful lot of waste going into the incinerator and contributing to greenhouse gas emissions. I suppose that's really where my interest and passion came for trying to bring what I was doing at home into my work life, and I think, during the pandemic, we've all been using a lot more PPE and become far more aware of what we're generating in our in our work life. So for me, it was really an opportunity to introduce some of the measures I brought in my personal life into my work life as well, where there seems to be this huge imbalance,

Dr Misha Rosenbach 10:27

It's very easy to dismiss a lot of climate as, okay, this is overwhelming, whatever, or I don't know what to do, or future technology will solve it and the thing is, we can solve it now. So, the cheapest new energy is solar and wind and there are many sources like the ocean waves, gravity, geothermal, which will not contribute to greenhouse gases and so it is cheaper to build new solar power now than it is to run existing coal plants. The UK is a great model where there are maps of how much of the UK is energy comes from coal, and they've gone hundreds of days without any coal energy and actually, you've mentioned the UK HealthCare. The NHS, I think, has committed to carbon neutrality, which is certainly far more advanced than the US healthcare system, where, if you look at US health care system emissions as a sector, it would be one of the top 10 emitting nations in the world and so there's certainly a lot of room to move on that.

You also touched a little bit on personal responsibility, this is something that, I think it's really important that you guys are doing a podcast on this because it's very easy for people to say, well, I'm going to eat vegetarian or vegan so there's less land use for beef, or I'm going to get, I don't know, hybrid, or electric vehicle or whatever, or recycle my bags. We also know that the vast majority of emissions and plastic waste come from a very small number of companies, and no one should feel like their individual choices don't matter. But no one should also feel like it's their individual fault that this is a crisis, this is something that will require sort of global cooperation industries, you know, something like the NHS, making a move matters, obviously, like infinitely more than, you know, individual choices, but I think it all feeds in together. And, you know, you touched on sort of flying and how the COVID pandemic has been, in some ways a setback. But the COVID pandemic, also, I think, has opened up people's eyes to some of the alternative models and ways to do things where I think, you know, we have our next American Academy of Dermatology meeting, and we're putting together our speaker session, I don't know if you would normally be travelling across the Atlantic to come, but we would certainly, like easily now be able to have you as like, you know, a virtual speaker or recorded lecture, which I think little to nothing is lost from an audience member, but it really broadens our global reach, and can reduce our carbon footprint in real meaningful ways.

Matt Gass 12:41

Yeah, I think those are all really fantastic points and it's really interesting hearing about the differences between America and the UK, in terms of its very different healthcare systems. And obviously, the benefit of not being so fragmented in the UK, is that you can make these more sweeping changes as a sort of whole organisation from the NHS. It's really fascinating, all of it. I do want to touch on, later on, perhaps a little bit on the skincare industry, because, you know, it's something obviously a lot of our listeners will interact with on a daily basis, there will be consumers in some form or another and there is a lot of pressure, I suppose, pressure is perhaps the wrong word but I suppose I feel that I want to be responsible as an individual and buy responsibly and think about the impact that my decisions have on the planet but I think you're right, it does need to be these systemic changes and large actors who can have more influence really can have such a huge impact. One of the big questions we have at the moment is around pollution and the impact that has on our skin, I do see a lot, you know, I'm in a fortunate position to have access to various BAD journals, I do see a lot of material published on this at the moment and the impact that it can have on your skin. Can we maybe talk about, Rachel, you know, what impact does pollution have on our skin? And what can we do about this?

Dr Rachel Abbot 14:06

So, when we talk about pollution, we're mainly talking about greenhouse gases and particulate matter heavy metals. So there are two ways that these can affect the skin either directly, so when in direct contact with the skin, so I suppose traditionally, thinking about jobs, like chimney sweeps, where you had direct contact with coal, and with the skeleton, and then entry through the skin, I think when people think about pollution, nowadays, it's more airborne pollution from vehicles, particularly if you're living in a built up area. So, this would be indirect. So, it's inhaled into the lungs and then absorbed into the bloodstream and that's how it reaches the skin in an indirect fashion. We know that these are the two routes that can affect the skin and there have been studies comparing the effects of living in an area of high pollution, compared to an area of low pollution which should demonstrate there's both an inflammatory skin disease particularly worsened, I mean, the traditional one we think of as atopic dermatitis, which has been demonstrated to be worse in these sorts of situations. but it's most commonly from inhaling the pollution rather than from direct contact with the skin.

Dr Misha Rosenbach 15:17

The other thing that we haven't mentioned yet, which probably should, is the environmental justice aspects of climate change. So, I think Rachel's comment about different people in different areas may be exposed to more pollution. I don't know about UK population data, but in the US, there's certainly city-based data where, you know, some urban areas have more tree cover and get less hot, but some urban areas have less tree cover and are more prone to heat, urban heat systems that can be overwhelming. Similarly, more pollution in some of those areas are closer to coal factories and either surprisingly, or not surprisingly, it turns out that there's a lot of racial history behind which groups live in which areas and that has impacts on health of a community and population health, but also on our understanding of disease.

So if you think about what we're trying to understand atopic dermatitis, and you might look at a family and do genetic studies, or a group, but sometimes that whole cohort of people might be forced into living in a different area where they're different environmental risks, and maybe it's genetic environmental interfaces, and you've highlighted atopic derm, that's, of course, a good example. Wildfire smoke actually is another big environmental pollution issue that has particulate matter and in the US, we've seen a dramatic expansion of wildfire season and severity of wildfires, You probably hear about California wildfires, which might seem like they're far away but actually, if you look at satellite maps of the plume of smoke from California wildfires, it actually extends over above Greenland, where then the soot lands on the snow and turns it from white reflective snow into black absorbent colour, that then contributes to warming of the glaciers and accelerated melting, then that same smoke plume travels, I'm going to mess up my geography, but I think Greenland closer to the US than the UK, so eventually it gets to you guys and so, really, we are like all in a global community and a lot of these issues have these myriad of cascading consequences that we don't, at a glance, necessarily, totally take into consideration.

This is neither here nor there, but you mentioned flooding. So, right now, there's recently a cyclone in India that I think it either has, or just had impacted Mumbai at the time of our recording, and you hear about evacuations. But also, we know that right now, India is going through, a very severe struggle with COVID cases and again, this is one of these climate change, threat multiplier issues, it's very hard to evacuate into a different place when there's so much COVID going on. People have talked a lot about COVID as sort of a microcosm for some of the struggles with climate change, where if you look across the world, different countries have reacted differently to the pandemic and different countries have listened more closely to expertise and scientific consensus and as a result, different populations have seen different outcomes. Many climate scientists are pointing to some of

the misinformation propagation during the pandemic as emblematic of what climate science has struggled with for many years, where there's a funded, disinformation, vested interests group that fights back against the scientific consensus and best practices around climate change where things stand, what our understanding is, and what we have to do to avoid the worst effects of things. I think for listeners, climate change feels abstract and far away but we're seeing the impact of climate change on human health right now. Certainly, this right now, but also the next generation after that but the change the decisions we make now have impact on the climate that people will be living in for 1000s to 10s of 1000s of years, it's very hard to change things on a global scale and we're doing it very quickly, rapidly in the wrong direction. The lessons of exponential spread from COVID would be good for people to keep in mind from the exponential impacts that we're facing with climate change and the challenges of misinformation during the pandemic, I think are good for people to remember in terms of paying attention to people who are trusted voices who really know what they're talking about. In terms of climate change.

Matt Gass 19:14

Exactly. And I would say yeah, I mean, you talk about the USA, and I think the USA is good in a way because it's got so many different environments and ecosystems due to its size. You can talk about problems in the USA which are true, you know, talk about wildfires, I mean, Australia was in a very similar boat. We were talking about flooding earlier, there's places like Bangladesh that have to deal with regular issues with flooding. You know, these are common phenomena that happen. I'm sure there's lessons to be learned from each of these stories that are actually common in many parts of the world. I know that one thing similar to the tick story that you mentioned earlier, we're also seeing similar things happen in other parts of the world with jellyfish, increased jellyfish stings at different times of the year from when you would normally see them because of climate change.

I think there's commonalities that you can draw. When talking about pollution, I mean, every country has its big urban areas, and sometimes, impoverished areas versus wealthy areas within the same urban environment. So, I think there's these common threads that hold true for different areas. So, it's really interesting, and it's good, it’s nice that we can take a bit more of a global perspective.

Harriet Dalwood 20:25

Yeah, absolutely.

Dr Rachel Abbot 20:26

It's always more complicated than you initially think. It's just trying to get that nuanced message across in the right style, and that's acceptable to people, it's challenging. I think, in science we are learning to be better communicators. Yes. So, I'm hopeful that far more people are aware now of randomised control trials, because of some of the COVID trials and more of the general public have been enrolled in trials in the last year probably than ever before. I mean, it is quite phenomenal and so hopefully, people now have more understanding of the nuance of research and the challenges of trying to generate evidence. I am hopeful, we're very lucky actually just mentioned that in the UK, not only do we have, as you say the NHS have committed to carbon neutrality, however, we've also got the Centre for Sustainable health care, based in Oxford's, and I think they've been a fantastic focal point for those clinicians who are interested in environmental sustainability to try and generate networks. In Wales, for example, we're about to launch the Wales screen health network, which is really exciting, and I know the British Association of Dermatology, you've got a working party on

environmental sustainability. So, we're really fortunate in many ways in the UK. I don't know if you've got anything similar in the US, Misha?

Dr Misha Rosenbach 21:52

Yeah, there are a couple of organisations in the US, there's something called a Medical Society Consortium, which is focused on climate and health, they actually, if you count all the organisations that have delegates or committees, that is most organisations of physicians in the US. There are also some promising signs were both the AMA, which is the American Medical Association, and the ACP, which is the American College of Physicians, probably the two largest physician organisations in the US. Both have very strong statements around climate change, and the importance of integrating it into education and patient care, and that clinicians should be involved in sustainability and health care and mitigation efforts and should engage patients and the public as a trusted voice on explaining the health impacts of climate change for patients and for populations.

So again, I think individual choice is really important. But no one should discount the fact that individual choice is not going to solve this on its own. But if there's no individual pressure, no individual choice, there's unlikely to be industry or government response. So, I think there are published lists of companies that are more sustainable and their practices and there are companies that pay attention to everything from where their product starts and comes from to what's in their product to what happens with the end life of their product. I don't want to do product placement on your podcast, I feel like that's a conflict of interest, but people can Google this and again, we've talked a lot about vetted information versus misinformation. You can't believe everything you read on the internet, but there are clearly some companies that have made this a core part of their business model. There are some easy things though, where people use adult wipes. I think most dermatologists don't think these should exist and I don't know if anyone is nodding or not but there's a lot of allergic contactants on them that can irritate the skin and cause rashes, but then also these disposables, basically like plastic containing wipes.

I mean, again, I don't want to say you hear about the wildfires, and then we hear about the fat bergs, but this makes the news, right? This is a fat berg; you can't forget what a fat berg is. So, you know these quote, disposable wipes, people just flush these things but where did they go? Well, we're not very good at capturing waste and recycling waste and it's more of reduce, reuse, recycle but it's like don't use in the first place, so but then what should you use? Well, toilet paper? Why should there be bamboo toilet paper and what's the sustainable like, it's too much for an individual consumer to know but the adult wipes is a pretty easy one to point to. Also, cosmetics and topical things that have microplastics and beads in them, I don't know that there's any reason to do that and those are terrible because those immediately can't be captured, can't be recycled, enter all systems to the point that we each now consume one credit card worth of plastic per week, and we don't know the health implications of that. So maybe you, you know, excrete most of that but maybe you absorb some of that and we can find plastic particles in like placenta we can find plastic particles basically in the bottom of the Mariana Trench and at the top of Mount Everest. Why do you need plastic beads in your hand gel or your cosmetics or your microbeads or whatever? There's not a reason for that. So, there's some obvious low hanging fruit, but again, there should be regulation around that that shouldn't be something that people have to feel obligated to educate and do on their own. But I'd love Rachel's thoughts.

Dr Rachel Abbot 25:17

I agree. Yes. My understanding is that the annual GDP of the global cosmetic industry is equivalent to the annual GDP of Norway. Obviously, we've got COP 26, coming up, which the UK is hosting later this year so countries are being held to account but who's holding the cosmetic industry to account. I think, my understanding is also that in the EU, we've had regulation to ban plastic beads in cosmetics and sometimes, much as we don't like regulation, I think in some areas it is necessary, like you say, with these products, which should simply be avoided.

Matt Gass 25:49

Particularly with plastic beads, because my understanding is that the idea is that they're meant to be exfoliating, but you know, there's natural ingredients that will do that job. You know, some,

Dr Rachel Abbot 25:59

Ah, you use that phrase Matt, that term natural, so define it. Sorry (Laughs), I was just waiting for someone to do that.,

Matt Gass 26:07

Yes, that's true. Oh god, I've walked into my own trap, because we've talked about this before natural doesn't always mean good.

Dr Rachel Abbot 26:13

It could have been clean, it could have been natural, it could be sustainable, these marketing terms.

Matt Gass 26:18

That's terrible. I shouldn't have done that. But yeah, of course, natural doesn't necessarily mean good but you can use alternative ingredients is perhaps what I should have said,

Dr Rachel Abbot 26:26

Well, you're absolutely right, I think there is no definition, I was teasing, sorry, around the term natural and I think this leads to a huge amount of confusion in the cosmetic industry by consumers because it's used as a marketing term, yet it's not defined. So, regulation around this area will be really helpful as well because what we're seeing as dermatologists is that people are wanting to be more environmentally aware, they're trying to switch to products that are better for the environment. These products are being marketed as best for the environment, there's absolutely no evidence that there is and potentially they're more harmful for the skin. So, we're seeing an increase in the use of essential oils, for example, being termed as natural, that sort of oakmoss. And, well limonene is pretty much everything. I gather It's a very cheap by-product of the fruit juice industry and it's almost impossible to find a cosmetic ingredient without limonene in these days.

Matt Gass 27:21

Limonene is that a fragrance?

Dr Rachel Abbot 27:22

Sorry, yes, it's a common component of a lot of essential oils, actually, we're seeing an increasing allergy to that in our contact dermatitis patients, so, both irritant and cutaneous allergy to some of these ingredients. The problem is that the perception from a lot of consumers is natural is better for the environment and their skin, but as dermatologists we know that obviously we're big, well, this is a bit of problem. I do feel conflicted here because we're big fans of petroleum jelly in dermatology,

it's one of our mainstays where our patients have really inflamed skin. However, it is derived from petrochemicals and obviously, there is understandable enthusiasm amongst consumers to switch from products which are derived from petrochemical chemicals to plant-based products for example. So, moving to castor oil, coconut oil, palm oil, so it's going to have to come up at some point. So you might as well bring it into the conversation, in a controlled fashion, however,

Dr Misha Rosenbach 28:29

Yeah, this is very tricky.

Dr Rachel Abbot 28:31

My understanding is that actually, the cosmetic industry isn't as big a consumer of palm oil, as, for example, the food industry. There's huge controversy amongst palm oil, where it's actually interestingly, the carbon footprint of palm oil is actually lower than the majority of plant-based oils because of the high yield that you get from palm oil and so it's really complicated. Unfortunately, there is quite a lot of misinformation in this area, so it's led to a lot of consumers trying to avoid products with palm oil in, but what they don't realise is that actually, a lot of the ingredients, which they might not realise are actually derived from palm oil are still in the product, because we still need to get ingredients from somewhere and they either going to come from petrochemicals, plants, animals, minerals, you know, they don't just they're not just magically derived from somewhere. It's a question of educating consumers about where the ingredients in their products have come from and regulation to help make sure that these claims are actually appropriate and defined, where at the moment they're not at all.

Matt Gass 29:40

It's difficult for consumers to make informed decisions if they're not presented with clear information and who can possibly track global supply chains when they're trying to buy some shampoo? You know, it's not reasonable to expect that, so, I do think it's good that people try and make conscious decisions even if they are not always making perfect decisions because I guess that shows to industry what's important to them.

Harriet Dalwood 30:05

Yeah, it's brilliant that moves are being made. I know that Matt touched on it a little bit earlier for the individual, the consumer who might be listening to the podcast. So, if they're environmentally conscious, which I hope most people are these days, how would consumers go about lessening any impact that they might have on the planet? Do you think this requires industry or even government intervention for them to truly make a difference?

Dr Rachel Abbot 30:29

No. And I think that there is appetite for this. I mean, the problem is that the main message that we want to get across to consumers is, use less. If we go through everyone's bathroom cabinets, I'm sure we'll find a whole host of plastic bottles, which may never even be used and so understandably, that's never going to be a message that any retail industry is ever going to be comfortable with, because at the end of the day, they're a business and they sell their products. That's how they make money. So therefore, I think it's really up to those of us who work closely with the cosmetic industry and hopefully regarded as informed by consumers to really get this message across that the majority of your bathroom cabinet contents you probably don't need. We do know that it is a case of use less, avoid anything containing microbeads and wet wipes, and then reuse when you can, so for example

using a flannel instead of a wet wipe, using washable eye makeup remover pads rather than single use cotton remover pads. Now that we're washing our face masks every week as well, these are not difficult decisions to make, you know, switching to, for example, soap bars from liquid soap switching to shampoo bars and conditioner bottles, because the majority of these products are actually water. So, you're not only paying for 95% Water, for example, in conditioner, but you're also contributing to the supply chain of having transported that water from its original destination to your bathroom. So, there's lots of potential for reducing your carbon footprint of your skincare in a more meaningful way than the greenwashing that is presented by the cosmetic industry at present.

Dr Misha Rosenbach 32:14

You know, if you think about food, imagine you went into the supermarket or market or whatever, and you were shopping for food and there were no labels on anything, you might have no idea how many calories or you know, carbohydrates versus fat versus protein. Imagine there was a label on the food that said what the carbon footprint of that was to ship it there. Would you take into consideration not just the nutritional value or the cost, but also the global impact of that? It's not that farfetched to imagine that happening for all sorts of products where imagine you went into the beauty cosmeceutical aisle and you were looking for different moisturisers or sunscreens or whatever it is, and then you could see, this is sustainably farmed, this is local, this is not plastic wrapped, this is the impact of the lifecycle of this product, because you don't have access to that information, really handcuffs, you in terms of making an individual choice.

That's not to say, throw up your hands and don't make a choice. The issues that we struggle with is also what's the major issue right now. So plastic waste is a big issue and will be a big issue and the sooner we do something about it, the much better, it will be long term. Co2 and emissions are a critical issue and so, we have the solutions for that critical issue where, you know, I don't want to say well, you can ignore plastic and focus on co2 emissions. That's not really what I would say. But I think the question really becomes, where should you focus your efforts? So, if you're going to spend, let's say, 10% of your time to investigate products or whatever, and you spend it all on getting a moisturiser, that's 1% less polluting and then you take a flight to some tropical location so that you can wear that moisturiser. Really, you've probably done more environmental harm with that air travel than you had with your investigation into the sustainability of that topical.

That's not to say, no one should travel or go on holiday. One of the other things that the pandemic has shown us the beauty of exploring locally and that there are a lot of options kind of around where you are, and there are ways to take, I mean, certainly in Europe, you know, rail as opposed to air and if you invest in an electric vehicle, and you charge it from a power source, that is renewable energy, maybe you can make kind of shorter trips or travel with much less pollution than if you air travel and so if you're going to pick where to like get the most bang for your buck, it really is one of these things where air travel reductions is a big way to really reduce your negative climate impact overall as an individual.

Dr Rachel Abbot 34:45

As Misha said, it's looking at the bigger picture. I think there's been an element of this with sunscreen as well because everyone's focusing on the ingredients of sunscreen, which whether a physical sunscreen, or a chemical sunscreen is better for the environment when actually as I think was mentioned At the RSM meeting, a hat is better, think how many times you can reuse it, it's not getting washed into the sea. So, it's looking at the bigger picture, it's thinking if you're trying to reduce personal risk of skin cancers, then using as we discussed so often in our BAD skin cancer

prevention meetings, it's really trying to move the focus to staying in the shade, wearing clothing, wearing a hat, wearing sunglasses, and sunscreen as a last resort, and then you can worry about the ingredients of your sunscreen, which is a really grey area again, but I think people would be surprised by how little sunscreen that dermatologists actually use, because we use those other measures to prevent ourselves getting skin cancer. So actually using those measures, and then buying a very small tube of sunscreen to just cover the nose and those bits of skin that are exposed when you have to be out in direct sunlight is far better than buying a very large bottle of, potentially marketed as coral reef safe, sunscreen, which then you're going to then hope to your body in and going wash off in the sea, so it is looking at the bigger picture. It really is.

We know through some of the work that's been done by the Sustainable Development Unit, which I think as part of the NHS, we're very fortunate again to have that, did show that essentially patient and staff transport makes up a huge proportion of greenhouse gas emissions for healthcare and as Misha was saying, one of the disruption effects of the pandemic has meant that we're all far more comfortable now with technology moving towards more tele dermatology, and care in the community having more virtual conferences, which is reducing staff travel, because when I mentioned previously, I felt so guilty about putting every single disposable pack of instruments into, effectively, the sharps bin, which then went to the incinerator. But when we looked at the potential carbon emissions difference, if we were to switch to reusable packs in one whole year in our department, then we'd only save the equivalent carbon emissions of flying to Scotland and back.

That was really a lesson to me that as Misha was saying, if I just don't go to the AAD then you know, that says just comparing the impact and it's just looking at the bigger picture and think how can I, how can we as a specialty, and how can we as an organisation, how can I as an individual reduce my carbon footprint? As Misha was saying, plastic as a distraction, it's very visual, and we are very much focused on recycling at the moment. That's great. But it's missing the bigger picture of how can we really focus on reducing carbon emissions? Which is beyond urgent, it's an emergency, but we just haven't probably realised it yet.

Matt Gass 37:41

We've talked about it already. But I just maybe wanted to leave listeners who are medical professionals. Maybe you could just give, Rachel, your tips, if this is a topic they're interested in, what can they do to get involved? You know, how have you got involved? Any top tips that you can give?

Dr Rachel Abbot 38:00

I think it's finding like-minded people and creating a network and doing that within your work organisations, your professional organisations. We're all particularly, as clinicians, we're all members of many Auguste bodies and so often it is just standing up in a meeting and saying, hi, do we have a climate change policy? What are we doing as an organisation to try and reduce our carbon footprint. It's fantastic now that it feels there's real momentum in healthcare, so it feels like you're pushing against an open door a lot of the time. It's challenging as an individual, and it can be quite exhausting, in all honesty, because once you start making almost all decisions in your life based on the potential carbon footprint you're producing from that decision, that can feel quite overwhelming. It's hard, they always say that humans aren't great behaviour change. Greenhouse gases have given humans a pretty easy ride over the last few decades, but we can't continue, it's just not an option, we have to change. And, and there are ways of doing this more easily. The sooner we do it, the better, we can't continue as we are. I think one of the more shocking facts for me is that

even if we stay within the Paris agreement, that we accept that the globe will warm by four degrees, so closer to home, there will be no glaciers in the Alps. I thought, oh, it's being sorted, you go through the kind of denial phase and then think, oh, no, don't worry, it's okay, world leaders are on this and then you think, oh, they are not. We really need to show that we are ready for change, we want change, and we want it now, we're not prepared to wait another 20 years, this needs to happen now, and we need to show that to our organisations, our governments and we need to buy smart You need to, as consumers use our money to support those organisations that are reducing their carbon footprint and buying less.

Dr Misha Rosenbach 40:09

It's more of a political will and a societal agreement and I think climate change experts talk a lot about the importance of communication. Even just talking about it with others, I think you'd be surprised how many people care about this, but feel powerless or don't know what to do, so even if you raise your hand at a meeting or ask a question, or if you're involved in meeting planning, and they say, well, we're going to have this meeting here? You can say, well, can it be virtual? Or can it be hybrid? Are we going to have a hybrid option? There's probably going to be people who feel cooped up for the past 18 months. In the UK and US, we're very fortunate to have literally miraculous vaccines, which are allowing some potential return towards pre pandemic normalcy for many in our fortunate countries and people might want to travel or go on holiday and that's understandable. Okay, no one's saying you should never take a trip, but maybe you should look at, can I reduce one air flight into one drive or train, but you know, per year, even that, again, makes a meaningful impact but I think most people think about their children a lot and I think most people try to make things better for their children, you know, devote a lot of time and energy to making life better. I think every parent wants their children's lives to be better than their lives and I think everyone should realise that the science around global warming is it's settled science, it really there's five sigma certainty 99.97% agreement, all published papers, one out of 3000 of the last published papers argues against it as funded by fossil fuel industry.

There is, again, as people say, there's more evidence for human induced climate change than there is for gravity and there's some point when we can stop discussing whether it's true, it’s not, do you believe in climate changes? Do you understand the science? is the correct question, but we also know what we have to do to mitigate it and the issue that I think we struggle with is people talk about, you know, 2100 scenarios, or, if people don't adhere to Paris Accords, and we had three or four degrees C warming, what does that mean? And that can feel very abstract and far off, but we're seeing those impacts today and we're not seeing those impacts today in far off places like Sub Saharan Africa, or the Middle East, we're seeing those in the US we're technically New York City, I think can be classified as a subtropical zone now.

We have tropical mosquitoes in continental US causing disease and extreme weather events, there's more hurricanes that are more severe due to ocean warming and warmer air. So, these impacts are here now, but we know that the choices we make now have exponential impacts on the world that our children and our children's children will live in for 1000 to 10,000 years. We have an incredible responsibility, but incredible opportunity to make things better. and we can, it's not even that hard. We just all have to agree and do it.

Matt Gass 42:59

Absolutely. I think lots of people have organisations they are part of, whether it's a football club they support, or an association they're a member of like the BAD. I'm sure that people have local councils

or their equivalent in other countries. I'm sure a decision made by a local councillor that affects 1000s of people in this small community will do more to impact climate change, whether that's plastic use, or whether it's co2 emissions, then as an individual I can achieve by changing the cosmetics I buy. I think, you'd, be amazed at how receptive people can be as well. I know that the BAD, our members have been quite vocal about sustainability in recent years, and we've been very willing to accommodate that, and very keen to accommodate that, because it's a positive message for us. In organisations, there's always lots of pulls on what you can do, so it's helpful to have voices who are saying no, this is important to us. I do think speaking up and saying, whether it's your football club or your sports team of any sort, whatever it may be, ask the question of, what are you doing to be more sustainable? And how can we help that happen?

Harriet Dalwood 42:59

Yeah, I think it's this time for people to speak up. There's no more way in about.

Matt Gass 44:17

Absolutely.

Harriet Dalwood 44:17

Thank you so much to Dr Misha Rosenberg, and also Dr Rachel Abbott. Thanks, guys for coming in and speaking to us.

Dr Rachel Abbot 44:25

Thank you very much. It's been really interesting.

Dr Misha Rosenbach 44:26

Thank you so much, and thank you, Rachel, for teaching me so much and it's been a great discussion.