**Making tattoos and permanent make-up safer**

## Transcript

**Adam Elwan, Host**

Welcome to the Safer Chemicals podcast.

In 2015, ECHA and the European authorities assessed the health risks of chemicals in tattoo inks and permanent make-up. They looked at whether their use needs to be restricted in the EU. They also checked whether potentially harmful chemicals could be replaced with safer alternatives and what impact restricting their use might have on the manufacturing industry and on service sector jobs.

As a result of their assessment, the use of over 4000 hazardous chemicals will be limited. The EU has also banned the use of specific blue and green pigments used in tattoo inks. For these, the ban will apply in the beginning of 2023 to allow industry more time to find safer alternatives.

In this episode, you will be hearing from a toxicologist, dermatologist and a tattoo artist who talk about the negative health effects from harmful chemicals used in inks and how restricting them impacts the tattooing industry. Let's start with Sehbar Khalaf. She's a toxicologist and was part of the team that started the restriction together with other EU member states.

Sehbar welcome. Let's dive straight in. Can you tell us what this new restriction is banning and why?

**Sehbar Khalaf, Interviewee**

The purpose of the restriction is to protect consumers who want to get a tattoo or permanent make-up from health risks from problematic substances. The new rules will be enforced from the 4th of January 2022 and for two specific pigments, a blue and a green one, the rules will be enforced a year later.

The restriction is banning more than 4000 chemical substances and inks for tattoos and permanent make-up. The restriction will protect consumers from substances that are carcinogenic, mutagenic, but also substances that are toxic for the reproduction, skin sensitisers or damaging for the eye.

Many of the substances are already forbidden or restricted in other products, such as toys, textiles, but also cosmetic products. Can you talk a little bit about which countries were involved in this assessment? This is including Norway, Germany, but also Denmark and the European Chemicals Agency, ECHA, were involved in the assessment of the substances and the restriction.

**Adam Elwan, Host**

When does this restriction then enter into force?

**Sehbar Khalaf, Interviewee**

The rules will be enforced from the 4th of January 2022 and two pigments a year later in 2023.

**Adam Elwan, Host**

Maybe then going really in depth under the skin if you wish on what we're going to be talking about. So how could these chemicals be dangerous, particularly in tattoo inks?

**Sehbar Khalaf, Interviewee**

In the tattooing process, the ink is placed under the skin, and in this process, solid pigment particles are stored in the skin, while soluble particles are transported around the body. Over time, insoluble pigments will degrade due to exposure of sunlight or the body's own defense mechanisms, and this can release an exposure of the chemicals that can cause, for example, gene mutations over time.

**Adam Elwan, Host**

Gene mutations. That's a scary concept. Can you explain a little bit what what kind of gene mutations?

**Sehbar Khalaf, Interviewee**

Gene mutations are basically permanent changes in the genes, and they can be inherited in generations. Such mutations can cause genetic damage, and in some cases, it can actually lead to the development of cancer also.

**Adam Elwan, Host**

What about in terms of the scale of this? So what kind of numbers are we talking about? How popular are tattoos in Europe?

**Sehbar Khalaf, Interviewee**

Tattoos have actually been more and more popular over the years and the number of people in the EU who have a tattoo has increased over the last few decades. Almost 15% of the population in the EU have at least one tattoo or a permanent make-up tattoo.

**Adam Elwan, Host**

Wow, that's quite a big percentage. What about then people who've actually already taken a tattoo? Possibly with these inks, should they be worried?

**Sehbar Khalaf, Interviewee**

That's actually a quite difficult question, because both the creation and the removal of a tattoo is linked to adverse health effects. And when a tattoo is removed, it's typically done by laser or light. And in this case, substances will be broken down into smaller molecules and the smaller molecules are probably more likely to be absorbed faster in the body and also transfer around the body. And so it can be quite problematic to remove the tattoo also.

**Adam Elwan, Host**

I'm conscious that we're talking very much about tattoos specifically, but everything you're saying, I assume, also applies to permanent make-up, correct?

**Sehbar Khalaf, Interviewee**

Yeah, that's correct.

**Adam Elwan, Host**

Maybe then as a last question, what kind of advice would you give to people actually thinking of getting a tattoo? How can they stay safe? How can they protect themselves? What should they do before walking into that tattoo parlor and choosing to put something under their skin?

**Sehbar Khalaf, Interviewee**

If you want to get a tattoo or a permanent make-up, you should always choose a professional artist and ask if he or she has completed a hygiene course. If you are ill or suffering of a chronic illness such as diabetes or have a weakened immune system, you should consult your doctor before you are getting a tattoo. Also, if you are pregnant, planning to be pregnant or breast feeding, you should be extra careful. And lastly, if you already have a tattoo and experience any discomfort, such as itching or swelling, you should consult your doctor.

**Adam Elwan, Host**

That's really good advice that I'm sure our listeners will find useful. Thank you for joining us, Sehbar. Next, let's look at what effects these inks can have on our skin. We met Nicolas Kluger, who works at Helsinki University Hospital, as an adjunct professor in dermatology and venereology. Nicolas has many years of experience working with patients who have had allergic skin reactions caused by tattoo inks. Here's Päivi with the interview.

**Päivi Jokiniemi, Host**

Thanks for joining us Nicolas. Perhaps we could start by discussing how does getting a tattoo or permanent make-up affect the skin?

**Nicolas Kluger, Interviewee**

Well, of course, it's not natural to get a tattoo. Our skin is not made for that, but we know for centuries that you can get tattooed. We have the experience of older civilizations, but it's true that our skin react. It reacts first immediately when we get tattooed.

When you introduce the pigment, everyone who has got a tattoo knows it's painful. The skin gets inflamed. It's bleeding a bit. And the skin will heal for the next weeks. Usually it's two weeks, three weeks, one month big maximum. Also, part of the pigment, which is too superficial in the epidermis, will be peeled away during the healing phases.

When the tattoo has healed, it looks, I would say, inert or quiescent. It is mostly true, but there are little things happening in the skin. We know that we have macrophages, for instance, which are these cells, which are going to try to eat the pigment that are going to do a bit of work, even though it is not noticeable.

Also, the tattoo will always fade a bit the drawings will be a bit more blurry. So this is how it affects basically the skin in general.

**Päivi Jokiniemi, Host**

So you said that there is this initial reaction a couple of weeks, but are there any long term effects that we should be aware of in addition to this aging?

**Nicolas Kluger, Interviewee**

What we know, of course, is that a part of the pigment will migrate. It will migrate in the lymph nodes. So if you have a tattoo on the arm, the pigment will go into the lymph node. In most cases it is totally asymptomatic, and there is no proof that there is any dysmal on the local lymph node. Of course, if for some medical reason the lymph node has to be removed, it can be black, a bit darker, or the pathologists will say that they see pigments, but they have not really, I would say, a side effect as such.

Then the big question is, of course, if it goes to the lymph nodes, does it go elsewhere? That's a theoretical concern. It is possible, especially when the particles are very small, like the nanoparticles. In terms of clinical consequences, we have no proof yet that this would have an effect on the health of the tattooed individual.

**Päivi Jokiniemi, Host**

What is it then that causes this reaction on the skin?

**Nicolas Kluger, Interviewee**

If we talk about just a tattoo as such, the fact that you have been getting a tattoo and you have thousands of impacts of a needle on the skin, the body will react against the pigment. Then the second question is people who have side effects, why do they react? And that's another problem, because we are not totally sure what is the cause. But as every allergic reaction that we have, like people are allergic to peanuts or allergic to birch, there are some people who are most likely predisposed themself to get a reaction to a component which is in the tattoo ink.

**Päivi Jokiniemi, Host**

Then about severe skin reactions after tattoos. How often does that happen? Do you have any statistics?

**Nicolas Kluger, Interviewee**

From the studies basically what regards tattoo allergy it could be between 1% to 8%, very broadly speaking, because it really depends on the studies, it really depends on setting, how many people we asked.

Tattoo allergy means that at some point there is a reaction that happens on the tattoo, on one colour and it starts to get swollen, it's infiltrated and itches a lot. It can be painful, and it can be considered as severe because it impacts the patient's quality of life.

The second severe complication, I would say, is infection. But yet again, I don't have numbers about that. But it seems that now as professionalisation of the tattooist activity and training and education of hygiene and asepsis, We see less of these infections on tattoos, so it looks like a tattoo which is inflamed, with puss, and it happens very quickly after the tattooing procedure.

**Päivi Jokiniemi, Host**

About the tattooing inks then, are all types of inks equally problematic?

**Nicolas Kluger, Interviewee**

Red colours or sister colours like pink or violet, most likely because of the red component they are the ones that really give the tattoo allergies and the tattoo reactions. The reason why it happens in these colours in the past, it was easy. We knew it was mercury, which was very widely used and is a very powerful sensitiser but nowadays in professional inks that are controlled, we hardly find mercury in it, and there is a threshold that has been fixed by the European Council already more than ten years ago. However, we still have the reaction. So there is something else now, and we know that there are, for red colours, azo dyes, and we are suspecting a few of them to be responsible of this tattoo reaction. But we are not totally sure why.

And we do think currently the trend is to think that the problem is not in the ink, but in the skin. Once it has been put in the skin, there could be modification, the ink pigment changes and then it becomes more sensitive. That's why people have a tattoo for weeks, months, everything goes fine, and suddenly one day it starts to react. If it was a real allergy as we understand, like you put the allergen this should react very quickly. And that's not what we see in practice, or very rarely.

**Päivi Jokiniemi, Host**

Do you know if it's only some people who react?

**Nicolas Kluger, Interviewee**

You have some people who are most likely predisposed and the concept is very simple because it happened in practice. You have a tattoo, everything goes fine. And let's say that now the component has changed. To get an allergy, you need to be again in contact in another way. So we have people who react after a second tattoo. Suddenly the first starts to react because now it cross-reacts, the body sees that there is something new.

A long time ago when it was mercury, we had people who have tattoo reaction after getting vaccination because the vaccine contain mercury, and there was also a very nice, it's an exceptional case, but it illustrates well, in Japan. A patient reacted to his tattoo after eating salmon and they nicely showed that the salmon was most likely rich in mercury at the time. So we have a bit of hint that it works that way. You have to be in contact again with the same allergen, but you also have your own predisposition that you are going to react.

**Päivi Jokiniemi, Host**

If someone is now experiencing the type of issues with their tattoos that we are discussing here now, what would you advise them to do?

**Nicolas Kluger, Interviewee**

We will treat first the reaction. Try to go through it because we can still treat it, even if it's challenging. Of course, the second question they always ask is can I get a new tattoo? For the colour, it's clear that we have to forbid them the same colour again. If they're allergic to red, I tend to forbid red ink, orange, violet - every colour that has a risk to have the same red colour inside. Of course, sometimes when I have the ink, I can check on the ink packaging, what pigment has been used and try to be a bit more precise and give them one colour to avoid. That's a bit tricky because we know also by experience that not all the packaging are unfortunately trustworthy.

And sometimes you have in studies, especially in Switzerland, that shows nicely that you find sometimes something else that was not on the packaging. So I cannot promise the patient full satisfaction with a new red. I got the stories of one patient who did not listen to me and still redid the tattoo with a different brand but the same red colour, and the person reacted on the new tattoo again just on the right spot of the red colour. So it was a nice reproduction of my warning, so I preferred to say like, choose another colour or no more colour. If you have reacted to red.

**Päivi Jokiniemi, Host**

What is your opinion about the restriction limiting or banning the use of more than 4000 hazardous chemicals in tattoo inks and permanent make-up?

**Nicolas Kluger, Interviewee**

This is, of course, excellent because we don't want to put in the skin things that are forbidden anywhere in other indication that makes sense to me. The question is, if we forbid something, does it have a relevance in the tattoo as such, because we know in toxicology that you can have things that are toxic or are problematic in a way that you introduce. But in another way of introduction, it does not pose any problem.

What has been always feared by the industry and the tattooist also consequently, is that if it happens that in this list of 4000, there is like a very, very basic ingredient that is like the basis of all the inks, it's like cutting the roots of the tree and we lose everything. And because it was on the list, and maybe in the context of tattooing, it was not so problematic. So this is something that was feared by the tattooists and the manufacturer that that could happen. So this is something to be debated, I think, after the law is gone.

Can we rethink some of the specific products that are on the list? Just see if they are really necessary in this list, in the tattooing indication, this is going to be crucial, I think, in the next years.

**Päivi Jokiniemi, Host**

Do you think that the restriction would have an impact on safety for people who are getting tattoos?

**Nicolas Kluger, Interviewee**

Yeah, it should have an impact anyway, because we still don't know all the reasons why people are reacting. For instance, for allergy, we say the pigment, but sometimes we wonder if its not a conservative, a preservative or something else. So of course, it could have an effect and even us, dermatologists working tattoos, we have discussed that this year, we noticed that we had a bit less allergies right now. We had more other complications, like what we call a granulomatous reaction to black tattoos, which are not related to allergy. It's another reaction that I think will be more difficult to get rid of because it's really something that comes from inside, I would say.

So we could expect an improvement if the inks are able to follow the REACH procedure. We know that there are also inks that are available that are not going through REACH because you can buy them very quickly or very easily on the internet. And it has been also shown nicely this year that there was a difference between the ink that you can buy yourself on some website and the one that you get from the official suppliers. And there is also inks that are clearly counterfeit. They look the brand and they are not. And this is also a problem of course. So we could see a difference according to the use of official inks and inks that are not respecting at all REACH.

**Adam Elwan, Host**

Thank you, Nicolas, for sharing these insights with us and Päivi for the interview. Next, we asked a tattoo artist to share their thoughts on this restriction and how they are preparing for the changes it will bring to their business. We are joined by Rebecca from Alle Tattoo in Italy who talks about the importance of getting support on a national level and cooperation between tattoo artists, ink manufacturing industry and the EU.

What do you expect to be the main benefits of the restriction in terms in particular of safety for your customers, but also for the tattooing industry?

**Rebecca (Alle Tattoo), Interviewee**

The benefits are to reassure the clients and make them understand the difference between past and future. Reassure these clients, that the institutions are helping them to make sure that this kind of art is secure for everyone and can last long term.

**Adam Elwan, Host**

Do you see any potential challenges in actually putting this restriction into effect, for example, in the availability of safer alternatives for the substances that are banned?

**Rebecca (Alle Tattoo), Interviewee**

What reassures Alle is the answers that he gains from the producers of ink. They are really working hard to make sure that these inks can work and can be on the market. Tattoo artists should be able to trust the rules that are imposed by ECHA. It is important to create a big group of tattoo artists so that when there is important information from Europe, this group of tattoo artists can communicate information accurately and in a well manner. To close the circle between ECHA, the European community and tattoo artists will be very important.

**Adam Elwan, Host**

Is there anything else that you would like to highlight?

**Rebecca (Alle Tattoo), Interviewee**

The 500,000 people that are working in the ink industry trust you. If we collaborate well together, we will not lose our workplaces and the 135,000 tattoo studios will not close.

**Adam Elwan, Host**

This brings us to the end of our episode. Thank you to our guests and to you for tuning in. If you want to find out more about restricting the inks in tattoos and permanent make-up, visit echa.europa.eu.

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