



## Science Magazine Podcast Transcript, 16 February 2009

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### *Music*

#### **Host – Robert Frederick**

Hello and welcome to this special *Science* Podcast from the 2009 AAAS annual meeting in Chicago, Illinois. It's February 16th. I'm Robert Frederick. In this short podcast we'll hear from *Science* news writer Erik Stokstad, who attended a session on nano-foods. The question is, 'Will they lead to a healthier living?'

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#### **News Writer – Erik Stokstad**

I'm here with Hermann Stamm, who works on nano-materials at the European Commission's Joint Research Center's Institute for Health and Consumer Protection near Milan, Italy. And he was a presenter at a session this morning at a session on "Nanofoods for a healthier living?". So a lot was discussed about the possible benefits and risks of these foods. I wonder if you have an example of what you think a unique benefit might be from a nano-food – something that could be provided that we wouldn't get from normal food technology, food science, normal foods.

#### **Interviewee – Hermann Stamm**

Yes, there are many different benefits, of course, but I also found this example, which Qasim Chaudhry who also participated in this session, has given. This is his "WOW mayonnaise," where you create nanostructures which can encapsulate water. So you have a mayonnaise which has less fat in it but which has the same taste.

#### **News Writer – Erik Stokstad**

There is an amazing range of applications discussed, from the chocolate shakes that would use nano-silica coated with chocolate to give a more intense flavor, perhaps. Of this range of applications, from looking at the risks, are there certain types of things that could be done that raise more questions than others?

#### **Interviewee – Hermann Stamm**

Yes, certainly, there is a very wide range. The example I just, gave, for example. If you have nano-droplets of something and if they are then solubilized in the intestine, you have no risk which is specific for nano, it's just as a normal thing and you have no additional risk posed. As in other cases of using nano-materials and nano-particles in different consumer products, there are also nano-materials which are bio-processed, those ones which are not soluble, and which because of their smallness can translocate in the body, go to different, secondary target organs like liver, whatsoever what you would think, and then they can possibly, possibly exert a toxic effect on the tissue where they are in.

**News Writer – Erik Stokstad**

There was a number on the order of 80 or 85 food-related products that are already on the market that may have nano-materials in them. I wonder, has there been any examples of actual harm so far? Or are these mostly hypothetical situations that we are trying to figure out?

**Interviewee – Hermann Stamm**

There has not been actually, especially with food, something of harm which is specially related to nanotechnology. And if you look in detail at these 80 products, it's very few where you have, it has an ingredient or something like that which you really eat. On the other hand, for example, food industry claims that in Europe there is no product on the market which contains nanotechnology. Of course, we know that we can buy things through the Internet. But it's not only in the food case. There is not a real striking example so far that nano-particles could be especially harmful where you have a real hot case where you can show it. On the other hand, we are exposed to nano-particles a long time, since viruses in principle, and we know that there is, for example, looking at ultra-fine particles coming from combustion processes in highly dense-populated areas, that there have been some epidemiological studies we know that they can have an effect on certain types of diseases concerning the blood circulation, heart diseases, and so on. So there is a suspicion and a correlation. That's where the concern comes from. But from a consumer product view, there is nothing which can be really related to nano which has been harmful. But we know of a lot of benefits which we can get out of it.

**News Writer – Erik Stokstad**

I was struck this morning by how little is known, or how much remains to be learned, and even developed. In your presentation you discussed that we have very few routine methods for even detecting these particles in food. So what would you say are the most pressing questions from the research side in terms of understanding the potential risks and hazards?

**Interviewee – Hermann Stamm**

From my point of view, the most pressing question is to understand the kinetics. If you are exposed to nano-particles through inhalation, in the end, it's not so much a difference, or through ingestion, but perhaps also through skin using cosmetics, it's the bio-kinetics or they're called toxicokinetics: where can they go if you have persistent nano-particles, for example? And you have only risk if they can be accumulated somewhere, and then have – due to their persistence – a possible toxic effect. So I think that's very pressing to know. But if you can have not routine means – you can always detect it somehow – but if you have not routine means to be able to detect nano-particles in food, you have no way of controlling it.

**News Writer – Erik Stokstad**

I get the sense that at present we can't say that certain materials are or are not generally safe. So do we know if research on safety is keeping up with technological development?

**Interviewee – Hermann Stamm**

We have a very new situation also in this. We are introducing new types of products and we are concerned right from the beginning about potential, harmful effects. And of course if some product is introduced – you always with research – you have to follow this up afterward somehow, and accompany it. Regulation – it depends how it's set out – so if it's the responsibility of the producer, then he has to show that it is safe, and he has to do all the studies, of course. And there must be guidelines what has to be studied. But new products will also, new technologies will be always ahead. And what, at the end, you need is a reasonable analysis between benefits and the risks. And that's a tricky issue, of course. But there are a lot of benefits also in it. So you have to do intensive research and more intense research, I think, for the safety aspects. And there is quite a lot still to do. But it's quite natural that the technology is a little bit ahead of the safety part.

**News Writer – Erik Stokstad**

So, in the meantime, do you have any thoughts for consumers? Should they be worried? Should they...?

**Interviewee – Hermann Stamm**

Let's say, looking at the safety of nano-particles and looking how they are regulated, it's always said that we – at the moment in scientific committees have reviewed it – that we have to follow a case-by-case approach. So, I personally would not be too worried, because we have no case so far. We have been exposed to nano-particles, our organism, since decades we are exposed to it. Our organism is used to deal with nano-particles of different types, naturally ones. So there is not an immediate concern. But, of course there may be certain aspects which have to be looked more closely, and I think that is always a case-by-case study. I do not see, for example, a reason why I should wear underwear which is coated or somehow treated with silver, nano-silver particles for an antibacterial effect. Even I am not afraid of so doing it, but I think there is no need for it. And we have to be careful, as in other cases, to make reasonable decisions. And that can be helpful, and perhaps it's just for fun,

**News Writer – Erik Stokstad**

Have you tried the chocolate milkshake?

**Interviewee – Hermann Stamm**

No, no, no, no. I only eat real chocolate with everything so I don't want to...

**News Writer – Erik Stokstad**

Macro-chocolate.

**Interviewee – Hermann Stamm**

Macro-chocolate, yeah, yeah, yeah.

**News Writer – Erik Stokstad**

Thank you so much for talking with us. It's been a pleasure.

**Interviewee – Hermann Stamm**

Thank you.

*Music*

**Host – Robert Frederick**

This has been a special *Science* Podcast from the 2009 AAAS annual meeting in Chicago, Illinois. If you would, please take a moment to give us your input. Write us at [sciencepodcast@aaas.org](mailto:sciencepodcast@aaas.org) or please fill out our online anonymous survey at [www.sciencemag.org/multimedia](http://www.sciencemag.org/multimedia). This show is a production of *Science* and of AAAS – the Science Society. Jeffrey Cook composed the music, and I'm Robert Frederick. On behalf of *Science* magazine and its publisher, the American Association for the Advancement of Science, thanks for joining us.

*Music ends*