

Paul Besseling on the future of HACCP

Alexander Platteeuw, A+ Quality:

A little tip for this episode, there will be some footage, so ideally you watch this episode instead of just listening. I'm Alexander Platteeuw from A+ Quality and I'm the host of this podcast as food safety coach, consultant and trainer. My guest today is actually a pioneer in food safety.

He graduated as a food technologist in 1985, yes. I was sitting on the lower school benches and I didn't even know that title existed back then. He earned his track record as a process technologist at a large Dutch juice company and started his career in 1995 at Precon Food Consulting.

It is clear that from the very beginning he adheres to the HACCP principles with a very warm heart. He even wrote a book about it. Hazard and Risk Analysis in Food Processing New Approaches Towards HACCP and Food Safety.

A 190-page pledge for the Bowtie technique in risk management. Bow tie or “vlinderdas” in Dutch, of “strikje” for the Flemish listener. In 2015 he applied to the Commission to revise the ISO 22000 norm and in 2017 he appointed the Codex Alimentarius Commission for the revision of the General Principles of Food Hygiene.

A man who actually breathes HACCP. Welcome, Paul Besseling.

Thank you, Alexander.

Paul, in 1985... I can hardly imagine how a HACCP study was looked at back then. Can you take us back to that time?

How did a juice company, in your case, start a HACCP study?

Paul Besseling, Precon Food Consulting:

First of all, about that training. Food safety was not a subject. We do learn about the benefits of pasteurisation and the killing of pathogenic bacteria such as salmonella.

We were also warned about Clostridium botulinum and that it was heat resistant and that sterilisation was an application. But those were actually the only two dangers that were mentioned. Listeria was not mentioned.

It was also barely known, I think. I don't know when Listeria exactly came to that name, but it was still a fairly recent determination. And things like mould toxins were never mentioned.

Yes, mould toxins could be produced in general, but haplotoxins, ochratoxins, names were not used. And things in front of you, like pieces of glass or pieces of metal, they were not discussed. All gene problems.

Oh yes, certainly not. No, so it was not a subject. It was treated temporarily in the field of microbiology.

Mr. Pasteur came by, of course. And that was it. And that was in the training, but in my little 10 years in the juice industry, of course.

Getting to know the beating of the whip. Yes, I had an incident with a milk tank filled with air that was then contaminated with oil because the compressor had broken down. I had an incident, yes.

We made chocolate milk from those packages that you know, Tetrapacks, with a line on the side. We put that chocolate milk in and it was mainly for the schools, it was called. Yes, yes, yes, yes.

And at a good moment, instead of putting chocolate milk in it, we put hydrogen peroxide in it. Disinfectant fluid in it. Two tenths of a percent hydrogen peroxide.

We disinfect our installations with that. So we did that for a minute or nine. So some packages contained a mixture of chocolate milk and that disinfectant fluid.

Others were just pure disinfectant fluid. The simple fact that it was in a package, a small portion of packaging, I would say, with a line on the side, made it a problem. The children pulled that line off, they poked it through the roof of the package and then immediately put it in their mouths.

If we had had the same problem with bottles, we would have seen it in the factory. If it had been filled in large packages, then it would have been detected during the disinfection. But the simple fact that it was in such a package with such a line on the side, made it so that different children drank from it.

One went to a gynaecologist, another went to a polyclinic. It was in Eindhoven, I think. After a few reassuring words from the doctor, from the gynaecologist, the problem was over again.

It was 0.2% hydrogen peroxide. That's not going to harm you in terms of health. But not the intention, of course.

It was definitely not the intention. And it was a huge incident for the company I was in at the time. It happened at the same time that there was a big incident in the Netherlands around baby food with halamide, a glycogen compound that was found in the meat.

Because the baby food manufacturer had set too high requirements for the meat supplier. And the meat supplier had thought well, I can meet those microbiological requirements if I add some halamide to it. And now a bit in the shadow of that incident we were then also with our incident.

And I'm talking about the early 90s now. In the early 90s it was shearing and injection. We now have in the Netherlands, I think last year we had something around 150 records.

That was earlier per month. I don't want to exaggerate, but it was really a lot more. Especially in the early 90s.

Alexander Platteeuw, A+ Quality:

Then you had to do a HACCP study. And I can imagine that you were sitting around the table and said, how are we going to start? What do we have to do?

Because literature was not of the same volumes as it is today. As you have here on the table.

Paul Besseling, Precon Food Consulting:

This is a book from 1988 about HACCP. But I didn't know that back then. And at the moment that HACCP was a legal obligation, that was in December 1995.

Then I was about to... No, then I had already started at Precon. Yes, then it was so pure.

But in my last time in the South, of course it was HACCP. We knew it was coming. And there were the necessary discussions about how to do that.

Alexander Platteeuw, A+ Quality:

But really the pioneers were then.

Paul Besseling, Precon Food Consulting:

And certainly also at Precon. Precon started as Precon Food Safety Systems with that HACCP obligation in the sails, actually. So that's how the company started.

And then we were also pioneering. And I was pretty fast in my own way. By thinking, hey, the way we handle it here.

And the way we handled it was actually from the process thought. Look, what can go wrong in the process or in the environment of the process? And could that possibly cause a problem for the consumer?

And I've always thought, hey, that's a process step analysis. And it's a danger analysis. We have to be able to say, could there be salmonella in our product?

Because that causes a problem for the health of the consumer. So actually I had a lot of the idea of, hey, we have to think back from the health of the consumer to where there may be a cause in our process. Instead of looking for causes in the process and thinking about the consequences.

Rather the other way around. And that's a thought that I still have.

Alexander Platteeuw, A+ Quality:

Yes, we'll get back to that later. As I said in my introduction, you took part in the meetings of the Codex Committee on Food Hygiene to review the general principles of food hygiene. How is it to include such a fundamental document that forms the basis worldwide for our approach to food safety?

After all, we're talking about the World Health Organisation, the WHO and the FO. And did you also notice differences in the way of view between the different countries or continents?

Paul Besseling, Precon Food Consulting:

Those meetings. I also took part in ISO 22000 and that's an international group of about 50 people. In Codex you're with 250 people.

And if you want to change one and a half, you have to work hard for it for a week. Oh my God.

Alexander Platteeuw, A+ Quality:

A lot of politics.

Paul Besseling, Precon Food Consulting:

Yeah, yeah, yeah. And as an ISO representative, I was in the back of the room. As the only one from ISO.

Behind about 15 Americans. They have a very big finger in the pocket with the Codex documents. And yes, the position of ISO was that we are the guest.

Codex are representatives of countries.

Alexander Platteeuw, A+ Quality:

Yes, okay.

Paul Besseling, Precon Food Consulting:

They're all on countries. They start in the front with Azerbaijan, I think, was in the front.

Alexander Platteeuw, A+ Quality:

Oh yes, it became alphabetical. Yes, yes, yes.

Paul Besseling, Precon Food Consulting:

Until Zambia at the end.

Alexander Platteeuw, A+ Quality:

Oh my God.

Paul Besseling, Precon Food Consulting:

So it's countries. Europe, by the way, European countries are represented by the European Union.

Alexander Platteeuw, A+ Quality:

Yes.

Paul Besseling, Precon Food Consulting:

But it's basically the countries that are there. And they are invited. We as ISO are invited as a guest.

As an observer, with also the right to speak. But in the back. So I was in the back of the room.

But also in the cells of the questions. Where is the country next? And then eventually ISO.

That had the advantage that you also had the last word. But it sometimes meant that a discussion was on a point that you wanted to touch on half an hour ago, was actually discussed. But yes, because the time...

Alexander Platteeuw, A+ Quality:
Yes, yes, yes.

Paul Besseling, Precon Food Consulting:
So it's... Yes, ISO doesn't have that much to say, actually. Yes, yes.

Alexander Platteeuw, A+ Quality:
Oh, okay. Yes. Yes, yes, yes.

You once said that HACCP sometimes is lost in a, I quote, language battle over definitions. Yes. Instead of understanding you already had it, cause and effect.

Has the vision of the Codex Alimentarius been able to weaken that discussion, according to you?

Paul Besseling, Precon Food Consulting:
No, no. No, that's also very difficult. That's also very difficult.

It's very difficult to talk about causes and effects. In general. People do that all the time.

Alexander Platteeuw, A+ Quality:
Yes.

Paul Besseling, Precon Food Consulting:
With the least or least things we are looking at. Because is there a chance for me? Is there a threat for me?

Can I go outside in the rain? Do I want to go outside? Do I not go outside?

These are all risk assessments. These are all risk and threat assessments. And people do that very quickly.

And very often they agree with each other when it comes to conclusions. But if you then ask give me the argument behind that conclusion. Then it turns out that people tell very different stories about it.

Yes, yes. And to, in terms of safety, yes, we want to get rid of those different stories. Because there will be one story, right?

About how that salmonella got into that product. That probably went along one line. How we tell that story to get that harmonised is very difficult.

And I found out along the way. In broad terms. I spent 10 years to understand what is HACCP about?

That's when I found out. Then I've been working for 10 years to investigate that. That botanical principle.

And in the last 10 years I've been working to make that botanical principle accessible to others. But what I found out in the first 10 years is that. Well, I said that in the second 10 years.

That nine definitions from HACCP are crucial. And those nine definitions are used in codex messily. Codex does not stick to its own definitions.

It also gets very difficult, right? Because there is, for example, a definition for control measure. But there is also a definition for control.

Control is something else than control measure. Do you still get it?

Alexander Platteeuw, A+ Quality:
Of course.

Paul Besseling, Precon Food Consulting:
That's very difficult. So if we want to tell those stories correctly, we have to be able to work well with those nine definitions. And I see with those nine definitions.

Every day I'm working on it, mistakes are being made. And the simplest example is. Dangers are harmful substances.

But in a lot of HACCP studies it says that the danger is that our metal detector doesn't work. Or that our cool cell doesn't work. That is a mistake that is made very often.

And the most painful is. Or the most difficult in the methodology is the definition of control measure. And control measures are pasteurisation, that's sieves. That's metal detection. That's away from HACCP. That's cooling. Especially in microbiology we know a lot about it. For chemical contamination, it is much more difficult.

For allergenes, the most important thing is separating and cleaning. Those are control measures. And that's actually food.

That's technology. I like to say "food safety technology". We often talk about food safety management.

Food safety has become far too much management. The certification standards are also a lot about management. The technology, the food safety technology has to be understood properly.

That's really the most important thing. That's actually my mission. Yes, there are too many shortcuts.

Alexander Platteeuw, A+ Quality:
At many companies that you see.

Paul Besseling, Precon Food Consulting:
Yes, yes. Because what we also have to understand is that safety systems consist of measures on measures on measures on measures. Controls on controls on controls.

The primary level of food safety is in that technology. That is to ensure that those harmful substances either do not end up in your product or that you take them out again. And that primary level is followed by a secondary level.

That we say, hey, if we're going to pasteurise, we have to make sure that the pasteur does what he should do. And that goes for the detector and that goes for the safe. That is the level of monitoring.

Also a term that is misunderstood in HACCP, by the way. The pass and the unpass is used. But that's the level of monitoring and the corrective actions.

That's the secondary level. And there are also tertiary levels. That is the verification.

And in practise, we will also see that there are quarterly levels. Oh yes.

Alexander Platteeuw, A+ Quality:
The check on the verification.

Paul Besseling, Precon Food Consulting:
Well, yes. And we have to do the verification ourselves. That's on the tertiary level.

But then an auditor comes along and he's on a quarterly level. And he's still being witnessed. He's on a...

How far are we? At five?

Alexander Platteeuw, A+ Quality:
I don't even know. It's five or something.

Paul Besseling, Precon Food Consulting:
Yes, that's how it is. Yes, and there's a GFI on top of that. So there are all levels on top of that.

And you can do a lot in those high-level levels. And a lot of money and time is put into it. But it's about that primary level.

That needs to be strengthened.

Alexander Platteeuw, A+ Quality:
If it's not already in order there, what are you doing on five high?

Paul Besseling, Precon Food Consulting:
HACCP is not in our analysis. HACCP is in our production line. That's where HACCP is.

And the documents that we produce are at best a reflection of that. A description of it. Yes.

Alexander Platteeuw, A+ Quality:
Yes, yes, yes, yes. Can I also tell you that there is insufficient knowledge about that technology? Do you see that going backwards?

Paul Besseling, Precon Food Consulting:

That's a problem, yes. Yes, yes, yes. In my training, when I started in 1980, we had four classes.

We were about 65 students. And that was in the HBO training in the Netherlands, of which we had two. So let's just say that we had over 100 students who started that study per year.

And they didn't finish it all, but every year there were 60, 70 food technology students at the HBO level. I'm not even talking about the university in Wageningen. But we don't get those numbers anymore these days.

While the safety of food starts there. It's food safety technology. And on top of that comes management.

Alexander Platteeuw, A+ Quality:

Yes, yes, yes, yes. Now, whether you turn it around or not, HACCP is still seen by many companies as difficult or difficult to experience. I declare my opinion.

The quality manager has to explain it to the auditor. Because the rest of the team, like the HACCP team, walks in a wide arc around that story when the auditor is there. Of course, it's not the easiest subject to explain to a non-native in an hour.

But it is and remains, as you said yourself, the basis of our risk management. What are your concrete tips to make that whole HACCP story more accessible to the non-QA people in the organisation?

Paul Besseling, Precon Food Consulting:

Well, what I just said about we have to tell that story, that argument, about why we do things the way we do. What's the story? If you want to do that well in HACCP, you have to get familiar with nine definitions first.

You have to learn to use them well. You can expect that from a quality manager who is trained, but you really can't expect that from the rest of the organisation. Difficult.

While thinking that cause and effect, that's not strange at all for people. Yes. And to avoid that language problem, you can draw very good diagrams of it.

People understand the Ishikawa diagrams very well. Yes. It's a well-known instrument in quality management.

It's very similar to that. And people are perfectly able to say, hey, oh, if there's salmonella in there and that comes into contact with that, then that salmonella will also go away, right? Yes.

And that there's a danger, and that there's a contamination, and that a lot of words come into play. But if you draw that, it's all much more accessible. Much more accessible.

Yes. So there are cause and effect relationships with measures in between. And those measures can fail again.

That failure also has a cause, and that also has consequences. But people can, if you draw that, people can follow that very well. Yes.

And that doesn't just apply to the employees in the factory, by the way, but it also applies to the board members. Certainly. Yes.

If you want to convince the board that a certain investment needs to be made through food safety, then such a HACCP approach is not very useful. Or such a HACCP table, because you don't ask such a director to read such a table, right? To go through the decision-making with you.

You don't have to ask a director that. You get five minutes to explain what's going on here. Yes.

And then a picture works just a lot better to say, dear entrepreneur, dear director, we have a weak spot in our food safety systems, it's there, and then you can point your finger there. Yes. In the picture, and if it goes wrong there, it happens, and that, and that, and that.

Alexander Platteeuw, A+ Quality:

Yes. Well, yes. So that's how you get the bowtie visualisation.

I can also recommend to the listener and the viewer to type in Paul Besseling on YouTube. Then there are very interesting videos on which you, three videos in which you really explain the methodology.

Paul Besseling, Precon Food Consulting:

Actually, it's the first one where I explain the bowtie principle. The second and the third are about ISO 22000 and the codex. And they have been dated a bit by now, because that was in 2018, of course.

But that bowtie technique, which has been around since the Second World War, we started doing risk analysis in the industry. That bowtie technique is just current.

Alexander Platteeuw, A+ Quality:

Ah, very well explained. A recommendation for the viewer. Now, the bowtie method is very similar to the cause and effect, very strict, with the top event, the loss of control in the middle.

Do you already notice that this method helps to better involve management in food safety?

Paul Besseling, Precon Food Consulting:

Yes, it's too early to say that. Yes. It helped me a lot.

Alexander Platteeuw, A+ Quality:

Yes.

Paul Besseling, Precon Food Consulting:

It helped me a lot. And what I said earlier, in the first ten years, I actually came out of that bowtie principle. Then I spent about ten years with students from Wageningen University through internships.

We investigated that model, how does it work now and how does it relate to HSSP. Well, I now have clear relations. Those nine definitions that I mentioned earlier, I can explain them perfectly.

It's also in the video, by the way. I can explain them perfectly in the diagrams we make. The point is, if you want to make those diagrams, you need software.

Yes, you can also draw them, but yes, they must also be documents. It must be possible in software, it must be possible in our management systems. So yes, we needed the software.

And the existing software in bowtie, because there is much longer software, and people who make it I have been in contact with for a long time, but I found that it was not entirely useful for the problem of food insecurity. So I couldn't get it right. And with the makers of that software, we now have an agreement that they have now developed a software that better fits the process-orientated approach of food.

Because actually the bowtie software is actually an incident management software, while in food insecurity it is very much about harmful substances that at a certain point in a process come and go with that product and maybe at a certain point go out again. So you have to that process that the food goes through and that harmful substance that route is laid out, you have to be able to make it visible. And in the first instance, the software was not designed for that.

And we are now solving So we are at the threshold of making that software.

Alexander Platteeuw, A+ Quality:
Are we talking about 2026?

Paul Besseling, Precon Food Consulting:
2026, yes. Yes, maybe for the broad market towards 2027. But we are really getting started with customers in 2026.

Alexander Platteeuw, A+ Quality:
Very curious. So yes, my next question was, how do auditors react to the bowtie in HACCP? I think I already know your answer.

Paul Besseling, Precon Food Consulting:
But yes, it is a very fair question and of course it was also a concern for me. So we also said with the same software makers that it is very nice if we can make a bowtie and we can see how the salmonella moves through that process. But we also have to be compliant.

I mean, improving food safety and reducing the risks for the company is very nice. But you also have to be compliant. And when it comes to compliance, then of course we are used to inspectors, auditors, but also quality managers to see HACCP presented in a table.

So the requirement to the software maker is very clear. Diagrams make it beautiful, but we also have to be able to show the diagram in a table. And we can do that.

Alexander Platteeuw, A+ Quality:

Yes, ok. Well, well, the future will tell. Let's go back to the ISO 22000.

A well-founded document if you ask me, but by the big boys of the GFSI the Global Food Safety Initiative not in line with their benchmarking and their LAT result. The number of food companies that are allowed to certify against the ISO 22000 standard in our country I can count them on one hand. Will there be a change with the next version?

Are there expectations?

Paul Besseling, Precon Food Consulting:

No, no. No, that has nothing to do with the standard but with the bureaucracy around the standard. What I wanted to say about that.

Oh yes, we do it especially FFCC here in Western Europe but internationally in other parts of the world there is a lot of ISO 22000 Yes, yes. But GFSI has requirements regarding the ownership of the standard. And the ISO is of course of ISO and ISO said And they can't deal with that anymore?

Alexander Platteeuw, A+ Quality:

Is it there?

Paul Besseling, Precon Food Consulting:

ISO didn't want to go along with the requirements that GFSI set around the ownership of the standard. Ah, ok. I can't tell the story other people can tell it much better but that's what I understood.

And ISO was not willing to change its statute or its organisation because of GFSI and that's why FFCC is no longer valid.

Alexander Platteeuw, A+ Quality:

Yes. So it will stay like that?

Paul Besseling, Precon Food Consulting:

But contentually for the company there is not much going on. So it's more of a bureaucratic situation.

Alexander Platteeuw, A+ Quality:

Too bad, yes. I was once in an industrial bakery from my time when I was still doing audits I was in that industrial bakery and they had broken glass from the glazed spots in the ceiling of the travel cabinet above the open product and they had labelled it as CCP. Strange.

And I know that one of your favourite words is definitions and CCP versus OPRP a point of attention of Waleer Can you explain to our listeners where the difference is between CCP and OPRP and you can also give your opinion about those spots in the ceiling.

Paul Besseling, Precon Food Consulting:

Yes, I know those spots in the ceiling. At least I knew that in the period where bakers chalk was produced. And they also had the agreement at each start of the team a number of glazed objects and also of plastic we will walk past and when something is missing

something is broken or something is missing then we will approve the production of the previous team.

And in the definitions of HACCP it all fits. And if we as a company see a risk for food safety then that is possible. It is possible.

I think it is not the biggest risk. You can't always estimate that. Maybe they had problems with glass in a dough for years.

I don't know.

Alexander Platteeuw, A+ Quality:
Maybe it was an incident I don't know.

Paul Besseling, Precon Food Consulting:
But when it comes to remarkable CCPs I think the most remarkable is the one about traceability. They had marked traceability as CCP. Because they made mistakes in our traceability.

That can have a huge impact and can bring enormous risks. And that may be true but if there is one CCP that does not fit in the definitions of a CCP then it is traceability. Because there is no clear risk.

There is no control measure. Traceability is actually supportive of corrective actions. The moment you want to make a correction on a product, you know where that product is and then you need that traceability.

And of course all in a recall. So that is one that does not fit in the definitions of HACCP. I think that is the strangest.

And OPPs are very difficult. In the Codex General Principles of Food Hygiene you know basic conditions and CCPs. That is how it was decided in 1993 in the Codex.

In this book from 1988, actually a kind of preparation for the work of the Codex International Commission on Microbiological Specifications of Food. In this book, two types of CCPs are described. And there is one type of CCP where we say, well, we can grant guarantees on that.

We can say with some certainty that that is correct. But there are also critical points where we cannot grant that guarantee. And as an example, for example, removing the intestinal package during a stroke.

That's a risk-taking point. And the art is of course that you prevent contamination. And that means that you can't damage the intestinal package.

So it's preventing contamination. Only monitoring, putting a surveillance on it, that can guarantee that if a mistake is made there, that mistake will be corrected. That is impossible.

And that is described in this book. This book is from what? It's from 1988.

And at the Codex level, they decided, yes, no, but we're going to say that there is a CCP, but that we can't grant guarantees on that.

Alexander Platteeuw, A+ Quality:
That's a bit contradictory, of course.

Paul Besseling, Precon Food Consulting:
Yes. So then I think, especially under the pressure of the Americans, we might have said, yes, but that's a guilt confession in advance. We're not going to do that.

So the whole concept of those CCP2's, as they are called here, has not been taken over by the Codex. And they have chosen to only name that as a CCP, which can really be guaranteed. While in the practice of food, around the slaughter process, there can be no guarantees for it.

Preventing mistakes during the slaughter process, that is extremely difficult. I know that pretty well for chickens. But I know it a little less for chickens and pigs.

But those are points that are very difficult to protect. And that also applies to products of raw milk. We would like to have a CCP on it, but that just doesn't work at all.

Well, the Chilean American or Tatar, or sushi, raw fish.

Alexander Platteeuw, A+ Quality:
All raw things, yes.

Paul Besseling, Precon Food Consulting:
And it is not for nothing that warnings are given for such products for pregnant women. But also in the case that we use a disclaimer for all genes, we actually say, yes, can contain peanut. Because we also make peanut cookies next to ordinary cookies.

And we cannot guarantee that our cleansings are capable, reliable and effective. Those three words are very important. Capable, reliable and effective.

We cannot guarantee that. So you are warned. So how do you explain within HACCP that such a warning is justified?

Well, in all genes, of course, we are at the end of the road with the PAL data and the FITAL calculations. But that is very difficult in HACCP. And that hot potato, that was decided with a codex in 1993, that we are going to circumnavigate.

And that is actually about things that we say, we would like to make a CCP out of it, but it cannot. And there are also enough situations where we say, well, we could make a CCP out of it, but it does not have to. It can go wrong and there is some uncertainty around food safety.

But we are not convinced that if it goes wrong, we should also block our products. Because we want to think about it as well as possible. And that concept of OPP actually has two faces.

And that is very difficult to explain. And also within ISO 22000 and also in the field of auditors a lot of different things are looked at. But in the practice of the food industry you just come across those aspects.

The company says, yes, we keep an eye on it, yes, we put surveillance on it, but if it goes wrong, it is not immediately a conclusion for us. Entrepreneurs need that. They need that situation.

And of course it turns out because in the 90s we came up with points of attention. And let's make it general management measures. And there are now in codex, and the codex is of course seen again in 2022, they have put the concept of GHPs that require greater attention in it.

So yes, you experience that there is a gap and you want to notice it. And that gap then also has actually two faces. One would like to, but it is not possible.

And the other says, we can do it, but we don't want to. To combine that in one concept is very difficult. It is black and white and there is a lot of grey.

And that grey is very difficult to define.

Alexander Platteeuw, A+ Quality:

Yes. Finally, Paul, what do you see as the next big challenge or game changer on the horizon of food safety management?

Paul Besseling, Precon Food Consulting:

Well, for us it is of course the introduction of the Bow Tie software. Yes. Yes.

And with that I also hope that HACCP, Food Safety is really focused on. Those definitions are useful, but at the moment that you see those diagrams, then those definitions go backwards. They are no longer that important.

And then we can talk much better of hey, we do this because of this risk and we don't do that because of that risk. And what we see in certification standards, yes, rules are added every time, rules are added, rules are added and this is kept or sticks to the rules. But the background of those rules, the risk that goes behind it, that is completely out of the picture.

We don't have to talk about that, because it's all in the standard.

Alexander Platteeuw, A+ Quality:

Yes, this is rain or clouds.

Paul Besseling, Precon Food Consulting:

The intention of HACCP was precisely to make those risks visible, to make them discussable. There we are actually also in a certification standard moved away a bit. But yes, I certainly hope with the introduction of Food Safety Bowtie, Bowtie principles in food safety that we will look more at those risks.

Yes, and in the end it goes in risk analysis it is ultimately because we invest our time, money and resources in those places where the risks are the biggest. That goes for a company but

that also goes for a society. And so when we talk about food safety and I'm talking about the Dutch society, we know in the Netherlands about 100 victims of unhealthy food per year.

That's very few. If we want to lower it further, a lot of money has to go into it. There is much more damage caused by unhealthy food.

Too much sugar, too much carbohydrates. And it's been a movement for years that has been used. The amount of money that goes to our food authority is getting less and less.

Budgets from the Food Safety Center for foresight are going up and that's right. In a society like the one we have now. So yes.

And that's what we actually want to do with risk analysis. Our money, time, our resources in those places where the threats are the biggest. Or the chances are the biggest, you could say.

Alexander Platteeuw, A+ Quality:

Wise words not to finish. Paul, thank you for this fascinating interview. I think it was clear when we had our pre-conversation a while ago that you are a real HACCP missionary.

I would say, keep your message spreading. Thank you and see you later.

Paul Besseling, Precon Food Consulting:

Thank you, Alexander.

Alexander Platteeuw, A+ Quality:

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I'm Alexander Plateeuw from A+ Quality and I'm ready to answer all your questions about food safety.