WEBVTT

NOTE duration:”00:53:48”

NOTE recognizability:0.545

NOTE language:en-us

NOTE Confidence: 0.6866663

00:00:00.000 --> 00:00:01.095 I'm Melinda Irwin.

NOTE Confidence: 0.6866663

00:00:01.095 --> 00:00:03.650 I'm a professor in the School of

NOTE Confidence: 0.6866663

00:00:03.731 --> 00:00:06.269 Public Health with Vasilis and also

NOTE Confidence: 0.6866663

00:00:06.269 --> 00:00:09.040 deputy Director for the Cancer Center,

NOTE Confidence: 0.6866663

00:00:09.040 --> 00:00:11.720 overseeing population sciences research,

NOTE Confidence: 0.6866663

00:00:11.720 --> 00:00:14.400 which focuses on lifestyle,

NOTE Confidence: 0.6866663

00:00:14.400 --> 00:00:17.360 genetic and environmental risk factors

NOTE Confidence: 0.6866663

00:00:17.360 --> 00:00:20.320 for cancer etiology and outcomes.

NOTE Confidence: 0.6866663

00:00:20.320 --> 00:00:22.828 So we're delighted today to have

NOTE Confidence: 0.6866663

00:00:22.828 --> 00:00:25.260 the Yale and National International

NOTE Confidence: 0.6866663

00:00:25.260 --> 00:00:27.992 expert in environmental carcinogens

NOTE Confidence: 0.6866663

00:00:27.992 --> 00:00:30.208 and cancer speak to us.

NOTE Confidence: 0.6866663

00:00:30.208 --> 00:00:31.354 Doctor Vasilis Vasilu,

NOTE Confidence: 0.6866663

00:00:31.360 --> 00:00:33.670 who is also he's the Susan Dwight

NOTE Confidence: 0.6866663

00:00:33.670 --> 00:00:35.129 Bliss Professor of Environmental

NOTE Confidence: 0.6866663

00:00:35.129 --> 00:00:37.971 Health Sciences as well as Chair of

NOTE Confidence: 0.6866663

00:00:37.971 --> 00:00:40.042 our Department of Environmental Health

NOTE Confidence: 0.6866663

00:00:40.042 --> 00:00:43.360 Sciences in the Yale School of Public Health.

NOTE Confidence: 0.6866663

00:00:43.360 --> 00:00:46.240 He received his PhD in Biochemical

NOTE Confidence: 0.6866663

00:00:46.240 --> 00:00:48.188 Pharmacology from the University

NOTE Confidence: 0.6866663

00:00:48.188 --> 00:00:50.708 of Ion Ionina in Greece.

NOTE Confidence: 0.6866663

00:00:50.708 --> 00:00:53.488 He then trained in gene

NOTE Confidence: 0.6866663

00:00:53.488 --> 00:00:54.600 environment interactions,

NOTE Confidence: 0.6866663

00:00:54.600 --> 00:00:58.241 molecular toxicology and pharmacogenetics

NOTE Confidence: 0.6866663

00:00:58.241 --> 00:01:00.246 at the Department of Environmental

NOTE Confidence: 0.6866663

00:01:00.246 --> 00:01:02.632 Health and the College of Medicine

NOTE Confidence: 0.6866663

00:01:02.632 --> 00:01:04.076 at University of Cincinnati.

NOTE Confidence: 0.6866663

00:01:04.080 --> 00:01:06.635 He joined Yale 10 almost 10 years

NOTE Confidence: 0.6866663

00:01:06.635 --> 00:01:09.368 ago in 2014 from the University

NOTE Confidence: 0.6866663

00:01:09.368 --> 00:01:11.953 of Colorado School of Pharmacy,

NOTE Confidence: 0.6866663

00:01:11.960 --> 00:01:14.158 where he rose to the ranks to

NOTE Confidence: 0.6866663

00:01:14.158 --> 00:01:16.406 become professor and director of the

NOTE Confidence: 0.6866663

00:01:16.406 --> 00:01:18.476 toxicology graduate program and was

NOTE Confidence: 0.6866663

00:01:18.476 --> 00:01:20.440 professor also of ophthalmology.

NOTE Confidence: 0.6866663

00:01:20.440 --> 00:01:22.916 He's established an internationally

NOTE Confidence: 0.6866663

00:01:22.916 --> 00:01:26.011 recognized research program that's been

NOTE Confidence: 0.6866663

00:01:26.011 --> 00:01:28.459 continuously funded by NIH since 1997,

NOTE Confidence: 0.6866663

00:01:28.459 --> 00:01:30.554 and his research interests include

NOTE Confidence: 0.6866663

00:01:30.554 --> 00:01:32.754 the etiology and molecular mechanisms

NOTE Confidence: 0.6866663

00:01:32.754 --> 00:01:34.602 of environmentally induced human

NOTE Confidence: 0.6866663

00:01:34.602 --> 00:01:36.912 disease such as liver disease,

NOTE Confidence: 0.6866663

00:01:36.920 --> 00:01:40.232 obesity and diabetes, cancer,

NOTE Confidence: 0.6866663

00:01:40.232 --> 00:01:42.716 and neurodegenerative diseases.

NOTE Confidence: 0.6866663

00:01:42.720 --> 00:01:45.560 Vasilis is the director of the N i.e.

NOTE Confidence: 0.6866663

00:01:45.560 --> 00:01:47.552 HS funded P 42,

NOTE Confidence: 0.6866663

00:01:47.552 --> 00:01:49.544 Yale Superfund Research Center

NOTE Confidence: 0.6866663

00:01:49.544 --> 00:01:52.802 and also the director of the NI

NOTE Confidence: 0.6866663

00:01:52.802 --> 00:01:55.454 AAA funded R24 Resource Center for

NOTE Confidence: 0.6866663

00:01:55.454 --> 00:01:58.157 Mouse Models and Metabolomics tools

NOTE Confidence: 0.6866663

00:01:58.157 --> 00:02:00.741 to investigate alcohol metabolism

NOTE Confidence: 0.6866663

00:02:00.741 --> 00:02:02.679 and tissue injury.

NOTE Confidence: 0.6866663

00:02:02.680 --> 00:02:04.945 This is really does translational

NOTE Confidence: 0.6866663

00:02:04.945 --> 00:02:06.757 research from preclinical work

NOTE Confidence: 0.6866663

00:02:06.757 --> 00:02:09.367 to clinical to community engaged

NOTE Confidence: 0.6866663

00:02:09.367 --> 00:02:11.451 research focusing on environmental

NOTE Confidence: 0.6866663

00:02:11.451 --> 00:02:13.239 risk factors in cancer.

NOTE Confidence: 0.6866663

00:02:13.240 --> 00:02:13.586 Thank you.

NOTE Confidence: 0.6866663

00:02:13.586 --> 00:02:13.759 Thank

NOTE Confidence: 0.3946306

00:02:15.600 --> 00:02:16.772 you very much, Melinda.

NOTE Confidence: 0.3946306

00:02:16.772 --> 00:02:18.237 Thank you for the invitation.

NOTE Confidence: 0.3946306

00:02:18.240 --> 00:02:19.950 And Melinda, thank you very much

NOTE Confidence: 0.3946306

00:02:19.950 --> 00:02:21.470 for the impressive introduction.

NOTE Confidence: 0.3946306

00:02:21.470 --> 00:02:23.520 I don't know if I

NOTE Confidence: 0.45481142

00:02:26.280 --> 00:02:28.560 anyway, so I wish.

NOTE Confidence: 0.45481142

00:02:31.920 --> 00:02:33.168 Let me start.

NOTE Confidence: 0.45481142

00:02:33.168 --> 00:02:35.664 Actually the talk of today's lecture

NOTE Confidence: 0.45481142

00:02:35.664 --> 00:02:38.600 is exploring environmental health,

NOTE Confidence: 0.45481142

00:02:38.600 --> 00:02:42.665 the insights through our P42

NOTE Confidence: 0.45481142

00:02:42.665 --> 00:02:46.092 Centre Research Centre on emerging

NOTE Confidence: 0.45481142

00:02:46.092 --> 00:02:48.344 contaminants and their their,

NOTE Confidence: 0.45481142

00:02:48.344 --> 00:02:52.080 their effects on cancer.

NOTE Confidence: 0.45481142

00:02:52.080 --> 00:02:54.960 So one of the concerns that we have is,

NOTE Confidence: 0.45481142

00:02:54.960 --> 00:02:58.800 you know that 50% or maybe more than

NOTE Confidence: 0.7186378

00:03:01.320 --> 00:03:03.994 more than 50% of the cancers might

NOTE Confidence: 0.7186378

00:03:03.994 --> 00:03:06.400 not be due to the genetic effects,

NOTE Confidence: 0.7186378

00:03:06.400 --> 00:03:07.920 might not be to mutations,

NOTE Confidence: 0.7186378

00:03:07.920 --> 00:03:09.540 might not be to polymorphisms

NOTE Confidence: 0.7186378

00:03:09.540 --> 00:03:10.836 or things like that.

NOTE Confidence: 0.7186378

00:03:10.840 --> 00:03:13.400 So they have an environmental impact.

NOTE Confidence: 0.7186378

00:03:13.400 --> 00:03:16.200 One of the things that has triggered

NOTE Confidence: 0.7186378

00:03:16.200 --> 00:03:19.612 my attention the last five or you know

NOTE Confidence: 0.7186378

00:03:19.612 --> 00:03:23.760 6-7 years is the early onsets of cancer,

NOTE Confidence: 0.7186378

00:03:23.760 --> 00:03:27.426 which actually there was a very

NOTE Confidence: 0.7186378

00:03:27.426 --> 00:03:30.380 nice review in Natural Nature

NOTE Confidence: 0.7186378

00:03:30.380 --> 00:03:32.720 Reviews in clinical oncology,

NOTE Confidence: 0.7186378

00:03:32.720 --> 00:03:35.752 which posed the question if the early onset

NOTE Confidence: 0.7186378

00:03:35.752 --> 00:03:38.798 of cancer is an emerging global epidemic.

NOTE Confidence: 0.7186378

00:03:38.800 --> 00:03:39.844 And it has.

NOTE Confidence: 0.7186378

00:03:39.844 --> 00:03:43.320 As you can see, the incidence of of

NOTE Confidence: 0.7186378

00:03:43.320 --> 00:03:46.768 cancers in various organs in ages less

NOTE Confidence: 0.7186378

00:03:46.768 --> 00:03:49.960 than 50 and actually less than 40,

NOTE Confidence: 0.7186378

00:03:49.960 --> 00:03:51.976 has been rising in many parts

NOTE Confidence: 0.7186378

00:03:51.976 --> 00:03:53.959 of the world since the 80s.

NOTE Confidence: 0.7186378

00:03:53.960 --> 00:03:56.810 The evidence suggests an ideological risk

NOTE Confidence: 0.7186378

00:03:56.810 --> 00:03:59.799 of risk factor exposures in early life.

NOTE Confidence: 0.7186378

00:03:59.800 --> 00:04:01.240 Young, under hood,

NOTE Confidence: 0.7186378

00:04:01.240 --> 00:04:03.640 and all those specific individual

NOTE Confidence: 0.7186378

00:04:03.640 --> 00:04:06.198 exposures remain to be largely unknown.

NOTE Confidence: 0.7186378

00:04:06.200 --> 00:04:09.077 So this is what my interests are,

NOTE Confidence: 0.7186378

00:04:09.080 --> 00:04:11.016 how this environmental exposures

NOTE Confidence: 0.7186378

00:04:11.016 --> 00:04:14.120 could lead not only to cancers but

NOTE Confidence: 0.7186378

00:04:14.120 --> 00:04:16.160 also to early onsets of cancers.

NOTE Confidence: 0.7186378

00:04:16.160 --> 00:04:19.121 And we can go from liver cancer

NOTE Confidence: 0.7186378

00:04:19.121 --> 00:04:20.800 to colorectal cancer with

NOTE Confidence: 0.7186378

00:04:20.800 --> 00:04:21.838 associations to alcohol,

NOTE Confidence: 0.7186378

00:04:21.838 --> 00:04:23.568 which I could give you

NOTE Confidence: 0.7186378

00:04:23.568 --> 00:04:24.760 another lecture on that.

NOTE Confidence: 0.7186378

00:04:24.760 --> 00:04:25.382 But anyway,

NOTE Confidence: 0.7186378

00:04:25.382 --> 00:04:26.937 the early onset cancer epidemic

NOTE Confidence: 0.7186378

00:04:26.937 --> 00:04:28.669 might be 1 manifestation of

NOTE Confidence: 0.7186378

00:04:28.669 --> 00:04:31.252 increasing the trends of the in the

NOTE Confidence: 0.7186378

00:04:31.252 --> 00:04:33.038 development of many chronic disease

NOTE Confidence: 0.7186378

00:04:33.038 --> 00:04:35.078 in the young and future generation.

NOTE Confidence: 0.7186378

00:04:35.080 --> 00:04:38.600 So what we come here is the

NOTE Confidence: 0.7186378

00:04:38.600 --> 00:04:40.280 early life exposure,

NOTE Confidence: 0.7186378

00:04:40.280 --> 00:04:44.040 it's the exposures of the of the mother.

NOTE Confidence: 0.7186378

00:04:44.040 --> 00:04:46.998 And actually now it's also exposure

NOTE Confidence: 0.7186378

00:04:46.998 --> 00:04:48.970 preconceptionally for both mother

NOTE Confidence: 0.7186378

00:04:49.045 --> 00:04:50.792 and father what they have been

NOTE Confidence: 0.7186378

00:04:50.792 --> 00:04:52.815 into it and how this would affect

NOTE Confidence: 0.7186378

00:04:52.815 --> 00:04:54.600 the development of the embryon,

NOTE Confidence: 0.7186378

00:04:54.600 --> 00:04:55.560 the later studies.

NOTE Confidence: 0.7186378

00:04:55.560 --> 00:04:57.772 So the exposome includes

NOTE Confidence: 0.7186378

00:04:57.772 --> 00:04:58.878 environmental exposure,

NOTE Confidence: 0.7186378

00:04:58.880 --> 00:05:00.544 Melinda talked about diet,

NOTE Confidence: 0.7186378

00:05:00.544 --> 00:05:00.960 lifestyle,

NOTE Confidence: 0.7186378

00:05:00.960 --> 00:05:03.990 obesity and microbiome and this

NOTE Confidence: 0.7186378

00:05:03.990 --> 00:05:07.020 this exposome has changed completely

NOTE Confidence: 0.7186378

00:05:07.112 --> 00:05:09.520 in the last 40 or 50 years.

NOTE Confidence: 0.7186378

00:05:09.520 --> 00:05:13.260 So a lot of people looking into how this

NOTE Confidence: 0.7186378

00:05:13.260 --> 00:05:15.840 Eddy life exposures could have an effect.

NOTE Confidence: 0.7186378

00:05:15.840 --> 00:05:18.416 Of course we should not ignore the

NOTE Confidence: 0.7186378

00:05:18.416 --> 00:05:20.987 exposure we have on daily basis and

NOTE Confidence: 0.7186378

00:05:20.987 --> 00:05:23.610 talking about that one of the most

NOTE Confidence: 0.7186378

00:05:23.610 --> 00:05:25.955 important thing is drinking water.

NOTE Confidence: 0.7186378

00:05:25.960 --> 00:05:27.871 You drink your water and in most

NOTE Confidence: 0.7186378

00:05:27.871 --> 00:05:30.060 of the cases especially when you

NOTE Confidence: 0.7186378

00:05:30.060 --> 00:05:31.796 come to emerging contaminants,

NOTE Confidence: 0.7186378

00:05:31.800 --> 00:05:34.054 you don't you have no idea what

NOTE Confidence: 0.7186378

00:05:34.054 --> 00:05:35.720 what the water contains.

NOTE Confidence: 0.7186378

00:05:35.720 --> 00:05:39.073 So it's it's a lot of aspects in here.

NOTE Confidence: 0.7186378

00:05:39.073 --> 00:05:41.528 So talking about drinking water

NOTE Confidence: 0.7186378

00:05:41.528 --> 00:05:43.840 and protecting the environment.

NOTE Confidence: 0.7186378

00:05:43.840 --> 00:05:46.216 So the federal government has the

NOTE Confidence: 0.7186378

00:05:46.216 --> 00:05:49.395 Superfund Act and what that is refers

NOTE Confidence: 0.7186378

00:05:49.395 --> 00:05:51.920 to a comprehensive environmental response.

NOTE Confidence: 0.7186378

00:05:51.920 --> 00:05:53.712 Compensation and liability are

NOTE Confidence: 0.7186378

00:05:53.712 --> 00:05:56.400 known as CLEFCLA since the 80s.

NOTE Confidence: 0.7186378

00:05:56.400 --> 00:05:58.656 So what the federal government did

NOTE Confidence: 0.7186378

00:05:58.656 --> 00:06:01.575 is they put a law that provides a

NOTE Confidence: 0.7186378

00:06:01.575 --> 00:06:04.130 legal framework for clean up sites of

NOTE Confidence: 0.7186378

00:06:04.207 --> 00:06:06.759 contaminate and hazardous substances.

NOTE Confidence: 0.7186378

00:06:06.760 --> 00:06:07.148 Especially,

NOTE Confidence: 0.7186378

00:06:07.148 --> 00:06:09.476 you know there are some states,

NOTE Confidence: 0.7186378

00:06:09.480 --> 00:06:13.560 Connecticut is a heavily industrialized,

NOTE Confidence: 0.7186378

00:06:13.560 --> 00:06:15.640 actually it's a retired,

NOTE Confidence: 0.7186378

00:06:15.640 --> 00:06:19.510 it's a retired state of heavily

NOTE Confidence: 0.7186378

00:06:19.510 --> 00:06:20.680 industrialized area.

NOTE Confidence: 0.7186378

00:06:20.680 --> 00:06:25.695 If I'll show you the sites of superfunds,

NOTE Confidence: 0.7186378

00:06:25.695 --> 00:06:27.795 either federal or local,

NOTE Confidence: 0.7186378

00:06:27.800 --> 00:06:29.368 we might walk away and go and

NOTE Confidence: 0.7186378

00:06:29.368 --> 00:06:31.277 look for a job or another state.

NOTE Confidence: 0.7186378

00:06:31.280 --> 00:06:32.735 It's everywhere and I will

NOTE Confidence: 0.7186378

00:06:32.735 --> 00:06:34.190 explain you why in I'll

NOTE Confidence: 0.76542088125

00:06:34.254 --> 00:06:36.120 give you some of these examples.

NOTE Confidence: 0.76542088125

00:06:36.120 --> 00:06:38.544 Again, we have to be taking

NOTE Confidence: 0.76542088125

00:06:38.544 --> 00:06:39.756 everything into consideration.

NOTE Confidence: 0.76542088125

00:06:39.760 --> 00:06:42.040 So there is the federal law,

NOTE Confidence: 0.76542088125

00:06:42.040 --> 00:06:44.800 if there is a company that has a spill out,

NOTE Confidence: 0.76542088125

00:06:44.800 --> 00:06:47.424 so they're getting a fine and that could

NOTE Confidence: 0.76542088125

00:06:47.424 --> 00:06:49.599 be hundreds of millions of dollars.

NOTE Confidence: 0.76542088125

00:06:49.600 --> 00:06:51.800 So this amount of money,

NOTE Confidence: 0.76542088125

00:06:51.800 --> 00:06:53.424 some of this amount of money they

NOTE Confidence: 0.76542088125

00:06:53.424 --> 00:06:55.531 go to the EPA and some of them

NOTE Confidence: 0.76542088125

00:06:55.531 --> 00:06:57.346 they go to National Institute of

NOTE Confidence: 0.76542088125

00:06:57.346 --> 00:06:59.371 Environmental Health Sciences and what

NOTE Confidence: 0.76542088125

00:06:59.371 --> 00:07:01.420 the environmental Health Sciences does

NOTE Confidence: 0.76542088125

00:07:01.420 --> 00:07:04.360 takes this money and creates a centers.

NOTE Confidence: 0.76542088125

00:07:04.360 --> 00:07:06.792 So you have we have here the Cancer

NOTE Confidence: 0.76542088125

00:07:06.792 --> 00:07:08.875 Center at the same time we have

NOTE Confidence: 0.76542088125

00:07:08.875 --> 00:07:11.288 the the Superfund research centers

NOTE Confidence: 0.76542088125

00:07:11.288 --> 00:07:14.480 through around the the United States.

NOTE Confidence: 0.76542088125

00:07:14.480 --> 00:07:16.838 And essentially the centers focus on

NOTE Confidence: 0.76542088125

00:07:16.838 --> 00:07:19.329 the understanding of health effects of

NOTE Confidence: 0.76542088125

00:07:19.329 --> 00:07:21.474 the exposures to hazardous substances,

NOTE Confidence: 0.76542088125

00:07:21.480 --> 00:07:24.216 developing innovative technologies

NOTE Confidence: 0.76542088125

00:07:24.216 --> 00:07:27.102 to mitigate essentially size,

NOTE Confidence: 0.76542088125

00:07:27.102 --> 00:07:29.757 clean up and engaging communities

NOTE Confidence: 0.76542088125

00:07:29.760 --> 00:07:32.160 affected by this environmental issues.

NOTE Confidence: 0.76542088125

00:07:32.160 --> 00:07:35.700 So their research contributes to the

NOTE Confidence: 0.76542088125

00:07:35.700 --> 00:07:37.955 overall goal of safeguarding the public

NOTE Confidence: 0.76542088125

00:07:37.955 --> 00:07:39.620 health and environmental in areas

NOTE Confidence: 0.76542088125

00:07:39.620 --> 00:07:41.800 of hazard or waste contamination.

NOTE Confidence: 0.76542088125

00:07:41.800 --> 00:07:44.016 So this is what are the centers and

NOTE Confidence: 0.76542088125

00:07:44.016 --> 00:07:46.722 this is as I said this is where the

NOTE Confidence: 0.76542088125

00:07:46.722 --> 00:07:48.520 federal money from penalties from

NOTE Confidence: 0.76542088125

00:07:48.520 --> 00:07:51.040 those cleanups go and they're coming.

NOTE Confidence: 0.76542088125

00:07:51.040 --> 00:07:52.918 So how many centers that exist?

NOTE Confidence: 0.76542088125

00:07:52.920 --> 00:07:56.752 We have 23 funded centers in the in

NOTE Confidence: 0.76542088125

00:07:56.752 --> 00:07:59.550 the United States and as you can see

NOTE Confidence: 0.76542088125

00:07:59.550 --> 00:08:01.680 on the top left is our Connecticut,

NOTE Confidence: 0.76542088125

00:08:01.680 --> 00:08:04.158 it's a Yale Superfund Reset centre.

NOTE Confidence: 0.76542088125

00:08:04.160 --> 00:08:07.443 This is the first ever centre we've

NOTE Confidence: 0.76542088125

00:08:07.443 --> 00:08:10.656 got in Connecticut and the focus of as

NOTE Confidence: 0.76542088125

00:08:10.656 --> 00:08:14.613 I said the focus of our the focus of

NOTE Confidence: 0.76542088125

00:08:14.613 --> 00:08:18.159 our centre is on emerging contaminants.

NOTE Confidence: 0.76542088125

00:08:18.160 --> 00:08:20.638 So what are water contaminants of

NOTE Confidence: 0.76542088125

00:08:20.638 --> 00:08:23.281 emerging concern now these are chemicals

NOTE Confidence: 0.76542088125

00:08:23.281 --> 00:08:26.083 that they're detected in trace amount

NOTE Confidence: 0.76542088125

00:08:26.083 --> 00:08:29.920 in our drinking water within global

NOTE Confidence: 0.76542088125

00:08:29.920 --> 00:08:33.852 drinking supplies that their risk on

NOTE Confidence: 0.76542088125

00:08:33.852 --> 00:08:36.930 human health is not fully understand

NOTE Confidence: 0.76542088125

00:08:37.027 --> 00:08:40.198 or even not been evaluated at all.

NOTE Confidence: 0.76542088125

00:08:40.200 --> 00:08:40.711 OK.

NOTE Confidence: 0.76542088125

00:08:40.711 --> 00:08:43.266 And what are these emerging

NOTE Confidence: 0.76542088125

00:08:43.266 --> 00:08:45.310 concerns include that including

NOTE Confidence: 0.76542088125

00:08:45.398 --> 00:08:48.236 industrial chemicals such as P Fas.

NOTE Confidence: 0.76542088125

00:08:48.240 --> 00:08:50.396 Everybody has heard about the P Fas.

NOTE Confidence: 0.76542088125

00:08:50.400 --> 00:08:53.704 Everybody you know today at least you

NOTE Confidence: 0.76542088125

00:08:53.704 --> 00:08:56.891 will get educated on on 1.4 dioxane on

NOTE Confidence: 0.76542088125

00:08:56.891 --> 00:08:59.393 some volatile solvents that they exist.

NOTE Confidence: 0.76542088125

00:08:59.400 --> 00:09:01.087 But in addition to that we have

NOTE Confidence: 0.76542088125

00:09:01.087 --> 00:09:02.840 a lot of pharmaceuticals,

NOTE Confidence: 0.76542088125

00:09:02.840 --> 00:09:05.905 personal care products and actually

NOTE Confidence: 0.76542088125

00:09:05.905 --> 00:09:08.962 yesterday NIHS had a webinar about the

NOTE Confidence: 0.76542088125

00:09:08.962 --> 00:09:11.840 Expos on on personal care products.

NOTE Confidence: 0.76542088125

00:09:11.840 --> 00:09:13.526 You'll be surprised how much they

NOTE Confidence: 0.76542088125

00:09:13.526 --> 00:09:15.770 go down the drain and how much they

NOTE Confidence: 0.76542088125

00:09:15.770 --> 00:09:17.360 end up in your drinking water.

NOTE Confidence: 0.76542088125

00:09:17.360 --> 00:09:18.503 It's truly amazing.

NOTE Confidence: 0.76542088125

00:09:18.503 --> 00:09:20.789 And of course you have pesticides

NOTE Confidence: 0.76542088125

00:09:20.789 --> 00:09:23.180 and herbicides that come from

NOTE Confidence: 0.76542088125

00:09:23.180 --> 00:09:25.120 the agriculture that eventually,

NOTE Confidence: 0.76542088125

00:09:25.120 --> 00:09:27.760 you know they're going to end up into

NOTE Confidence: 0.76542088125

00:09:27.760 --> 00:09:29.874 the water table and they're going

NOTE Confidence: 0.76542088125

00:09:29.874 --> 00:09:32.440 to add up to our drinking water.

NOTE Confidence: 0.76542088125

00:09:32.440 --> 00:09:35.653 So the overall objective of our Yale

NOTE Confidence: 0.76542088125

00:09:35.653 --> 00:09:38.535 Superfund Research Center is to improve

NOTE Confidence: 0.76542088125

00:09:38.535 --> 00:09:41.379 public health from the emerging water

NOTE Confidence: 0.76542088125

00:09:41.379 --> 00:09:43.638 contaminants in the drinking waters.

NOTE Confidence: 0.76542088125

00:09:43.640 --> 00:09:45.768 And what we're trying to do with

NOTE Confidence: 0.76542088125

00:09:45.768 --> 00:09:47.730 trying to develop not innovative

NOTE Confidence: 0.76542088125

00:09:47.730 --> 00:09:50.880 research in terms of the mechanisms

NOTE Confidence: 0.76542088125

00:09:50.880 --> 00:09:53.500 of toxicities that they this

NOTE Confidence: 0.76542088125

00:09:53.500 --> 00:09:55.472 emerging contaminants 'cause and

NOTE Confidence: 0.76542088125

00:09:55.472 --> 00:09:58.616 also look at the ways that we can

NOTE Confidence: 0.76542088125

00:09:58.616 --> 00:10:00.620 mitigate that we can detect and

NOTE Confidence: 0.52509516

00:10:00.694 --> 00:10:04.000 mitigate that and also

NOTE Confidence: 0.52509516

00:10:04.000 --> 00:10:05.062 inform the communities,

NOTE Confidence: 0.52509516

00:10:05.062 --> 00:10:07.184 talk with the communities, listen to

NOTE Confidence: 0.52509516

00:10:07.184 --> 00:10:10.000 their needs and talk to us about it.

NOTE Confidence: 0.52509516

00:10:10.000 --> 00:10:13.790 Our center has been focused on 1.4 dioxane.

NOTE Confidence: 0.52509516

00:10:13.790 --> 00:10:16.835 We and also it's what we call,

NOTE Confidence: 0.52509516

00:10:16.840 --> 00:10:19.740 I'm sorry walking around,

NOTE Confidence: 0.52509516

00:10:19.740 --> 00:10:22.800 I'm Greg, I'm sorry that's it's

NOTE Confidence: 0.52509516

00:10:22.800 --> 00:10:25.640 in my sense this is in my genes,

NOTE Confidence: 0.52509516

00:10:25.640 --> 00:10:28.400 it's not environmental.

NOTE Confidence: 0.52509516

00:10:28.400 --> 00:10:32.295 So it's 1.4 dioxin and what we call

NOTE Confidence: 0.52509516

00:10:32.295 --> 00:10:34.559 its Co contaminants which is 1,

NOTE Confidence: 0.52509516

00:10:34.560 --> 00:10:36.891 it's the dichloroethane,

NOTE Confidence: 0.52509516

00:10:36.891 --> 00:10:39.999 trichloroethane and also trichloroethylene.

NOTE Confidence: 0.52509516

00:10:40.000 --> 00:10:41.700 Those are volatile solvents that

NOTE Confidence: 0.52509516

00:10:41.700 --> 00:10:44.041 they exist and I will explain you

NOTE Confidence: 0.52509516

00:10:44.041 --> 00:10:46.353 why and how this has come up with.

NOTE Confidence: 0.52509516

00:10:46.360 --> 00:10:46.832 But essentially,

NOTE Confidence: 0.52509516

00:10:46.832 --> 00:10:48.484 this is what our center is doing

NOTE Confidence: 0.52509516

00:10:48.484 --> 00:10:50.199 and this is what we're focusing now.

NOTE Confidence: 0.52509516

00:10:50.200 --> 00:10:52.918 You can say why did you focus on that?

NOTE Confidence: 0.52509516

00:10:52.920 --> 00:10:56.153 So when I came here, it was 2014.

NOTE Confidence: 0.52509516

00:10:56.153 --> 00:10:58.757 I immediately went on,

NOTE Confidence: 0.52509516

00:10:58.760 --> 00:11:00.788 I think the next year immediately

NOTE Confidence: 0.52509516

00:11:00.788 --> 00:11:03.480 I met with the state authorities,

NOTE Confidence: 0.52509516

00:11:03.480 --> 00:11:05.520 the Department of Public Health

NOTE Confidence: 0.52509516

00:11:05.520 --> 00:11:07.370 and the Department of Energy

NOTE Confidence: 0.52509516

00:11:07.370 --> 00:11:08.480 and Environmental Protection.

NOTE Confidence: 0.52509516

00:11:08.480 --> 00:11:11.245 And I said I'd like to develop

NOTE Confidence: 0.52509516

00:11:11.245 --> 00:11:12.884 a Superfund research program

NOTE Confidence: 0.52509516

00:11:12.884 --> 00:11:14.994 for the state of Connecticut.

NOTE Confidence: 0.52509516

00:11:15.000 --> 00:11:17.597 What is the issue that you have?

NOTE Confidence: 0.52509516

00:11:17.600 --> 00:11:18.662 At that time?

NOTE Confidence: 0.52509516

00:11:18.662 --> 00:11:20.786 PFS were not that hot and

NOTE Confidence: 0.52509516

00:11:20.786 --> 00:11:22.808 actually thank God because we

NOTE Confidence: 0.52509516

00:11:22.808 --> 00:11:24.884 took the direction of 1.4 dioxin.

NOTE Confidence: 0.52509516

00:11:24.884 --> 00:11:27.412 Had they know anything about 1.4 dioxin?

NOTE Confidence: 0.52509516

00:11:27.412 --> 00:11:27.718 No.

NOTE Confidence: 0.52509516

00:11:27.718 --> 00:11:30.266 But they told me that this was the

NOTE Confidence: 0.52509516

00:11:30.266 --> 00:11:32.597 major issue and the major issue was

NOTE Confidence: 0.52509516

00:11:32.597 --> 00:11:34.717 because of this solvents on this

NOTE Confidence: 0.52509516

00:11:34.717 --> 00:11:37.360 multiple sites in the state of Connecticut.

NOTE Confidence: 0.52509516

00:11:37.360 --> 00:11:40.400 And the problem with 1.4 dioxin

NOTE Confidence: 0.52509516

00:11:40.400 --> 00:11:42.800 is they could not filter it.

NOTE Confidence: 0.52509516

00:11:42.800 --> 00:11:46.556 It would go through every aspect.

NOTE Confidence: 0.52509516

00:11:46.560 --> 00:11:48.360 And even in public water,

NOTE Confidence: 0.52509516

00:11:48.360 --> 00:11:50.376 they cannot filter it If if

NOTE Confidence: 0.52509516

00:11:50.376 --> 00:11:51.720 the source is contaminated,

NOTE Confidence: 0.52509516

00:11:51.720 --> 00:11:53.960 it will end up in your drinking water.

NOTE Confidence: 0.52509516

00:11:53.960 --> 00:11:56.669 So that was a major issue and This is

NOTE Confidence: 0.52509516

00:11:56.669 --> 00:11:59.512 why we chose to go with 1.4 dioxane.

NOTE Confidence: 0.52509516

00:11:59.512 --> 00:12:01.430 So the superfan center.

NOTE Confidence: 0.52509516

00:12:01.430 --> 00:12:02.980 And actually I'm really proud

NOTE Confidence: 0.52509516

00:12:02.980 --> 00:12:04.840 not because I got the grant,

NOTE Confidence: 0.52509516

00:12:04.840 --> 00:12:06.688 I'm really proud because I brought

NOTE Confidence: 0.52509516

00:12:06.688 --> 00:12:08.340 the four schools together and that

NOTE Confidence: 0.52509516

00:12:08.340 --> 00:12:09.600 is our school of public health,

NOTE Confidence: 0.52509516

00:12:09.600 --> 00:12:11.040 the School of Medicine,

NOTE Confidence: 0.52509516

00:12:11.040 --> 00:12:12.840 the engineering and the environment.

NOTE Confidence: 0.52509516

00:12:12.840 --> 00:12:14.480 And we developed this program.

NOTE Confidence: 0.52509516

00:12:14.480 --> 00:12:16.080 This program consists of,

NOTE Confidence: 0.52509516

00:12:16.080 --> 00:12:17.680 as you can see,

NOTE Confidence: 0.52509516

00:12:17.680 --> 00:12:20.560 four research projects and four course.

NOTE Confidence: 0.52509516

00:12:20.560 --> 00:12:22.400 We have the administrative core,

NOTE Confidence: 0.52509516

00:12:22.400 --> 00:12:24.520 we have the training core,

NOTE Confidence: 0.52509516

00:12:24.520 --> 00:12:28.520 the DMAC which plays the it's the

NOTE Confidence: 0.52509516

00:12:28.520 --> 00:12:30.680 data management and analytics.

NOTE Confidence: 0.52509516

00:12:30.680 --> 00:12:32.828 We also have the community engagement

NOTE Confidence: 0.52509516

00:12:32.828 --> 00:12:35.518 and of course we have the training,

NOTE Confidence: 0.52509516

00:12:35.520 --> 00:12:37.080 the training core that you're going.

NOTE Confidence: 0.52509516

00:12:37.080 --> 00:12:39.512 I'll go in a little bit more details

NOTE Confidence: 0.52509516

00:12:39.512 --> 00:12:41.637 when we move forward on this.

NOTE Confidence: 0.52509516

00:12:41.640 --> 00:12:42.702 So again,

NOTE Confidence: 0.52509516

00:12:42.702 --> 00:12:46.080 11 more time it was the concern

NOTE Confidence: 0.52509516

00:12:46.080 --> 00:12:47.160 of the public,

NOTE Confidence: 0.52509516

00:12:47.160 --> 00:12:49.800 of the public institutions was on

NOTE Confidence: 0.52509516

00:12:49.800 --> 00:12:52.356 1.4 dioxin for a particular reason.

NOTE Confidence: 0.52509516

00:12:52.360 --> 00:12:56.560 Because it is a possible human carcinogen.

NOTE Confidence: 0.52509516

00:12:56.560 --> 00:13:00.144 It has been found that it causes

NOTE Confidence: 0.52509516

00:13:00.144 --> 00:13:01.680 cancer in animals,

NOTE Confidence: 0.52509516

00:13:01.680 --> 00:13:04.770 but now there is no epidemiological

NOTE Confidence: 0.52509516

00:13:04.770 --> 00:13:06.730 studies yet in humans.

NOTE Confidence: 0.52509516

00:13:06.730 --> 00:13:09.520 This is why it's emerging contaminants

NOTE Confidence: 0.52509516

00:13:09.520 --> 00:13:12.306 and it's found with the other Co

NOTE Confidence: 0.52509516

00:13:12.306 --> 00:13:14.595 contaminants and has been prioritized

NOTE Confidence: 0.52509516

00:13:14.595 --> 00:13:16.631 by US Environmental Protection

NOTE Confidence: 0.52509516

00:13:16.631 --> 00:13:21.332 Agency on the on the 3rd Unregulated

NOTE Confidence: 0.52509516

00:13:21.332 --> 00:13:23.940 Monitoring role for testing in

NOTE Confidence: 0.52509516

00:13:23.940 --> 00:13:26.320 2013 and 2015 and you will see

NOTE Confidence: 0.73635834

00:13:26.396 --> 00:13:28.998 the map. It is spread

NOTE Confidence: 0.73635834

00:13:28.998 --> 00:13:30.996 throughout United States.

NOTE Confidence: 0.73635834

00:13:31.000 --> 00:13:33.895 So it's been also characterized

NOTE Confidence: 0.73635834

00:13:33.895 --> 00:13:37.227 as forever chemical just like the

NOTE Confidence: 0.73635834

00:13:37.227 --> 00:13:38.960 PFS because it cannot be filtered.

NOTE Confidence: 0.73635834

00:13:38.960 --> 00:13:41.516 It's very, it's difficult to be,

NOTE Confidence: 0.73635834

00:13:41.520 --> 00:13:45.124 you know metabolized by bacterial

NOTE Confidence: 0.73635834

00:13:45.124 --> 00:13:48.864 species and so on and it goes there.

NOTE Confidence: 0.73635834

00:13:48.864 --> 00:13:50.940 This is from the chemical Environmental

NOTE Confidence: 0.73635834

00:13:51.001 --> 00:13:53.746 news saying that this is really so when

NOTE Confidence: 0.73635834

00:13:53.746 --> 00:13:56.955 I put the team together, I put them,

NOTE Confidence: 0.73635834

00:13:56.955 --> 00:13:59.576 we wrote a big grant that we can

NOTE Confidence: 0.73635834

00:13:59.576 --> 00:14:01.994 we oversee what it was available,

NOTE Confidence: 0.73635834

00:14:02.000 --> 00:14:04.480 what was the scientific evidence,

NOTE Confidence: 0.73635834

00:14:04.480 --> 00:14:07.040 what was the demological studies,

NOTE Confidence: 0.73635834

00:14:07.040 --> 00:14:10.078 what are the strategies to mitigate that.

NOTE Confidence: 0.73635834

00:14:10.080 --> 00:14:13.112 And we we had that on a very

NOTE Confidence: 0.73635834

00:14:13.112 --> 00:14:15.451 nice review that actually helped

NOTE Confidence: 0.73635834

00:14:15.451 --> 00:14:17.952 us to get the team together.

NOTE Confidence: 0.73635834

00:14:17.952 --> 00:14:21.360 So 1.4 dioxane of course in three isomers,

NOTE Confidence: 0.73635834

00:14:21.360 --> 00:14:24.496 1.41 point 2 and 1.3,

NOTE Confidence: 0.73635834

00:14:24.496 --> 00:14:27.240 but the concern and the most most

NOTE Confidence: 0.73635834

00:14:27.333 --> 00:14:29.502 prevalent is the 1.4 dioxane.

NOTE Confidence: 0.73635834

00:14:29.502 --> 00:14:31.357 Is it a new chemical?

NOTE Confidence: 0.73635834

00:14:31.360 --> 00:14:32.119 No, it's not.

NOTE Confidence: 0.73635834

00:14:32.119 --> 00:14:33.890 I'm just not going to go in

NOTE Confidence: 0.73635834

00:14:33.961 --> 00:14:35.779 all details of this because we

NOTE Confidence: 0.73635834

00:14:35.779 --> 00:14:37.798 can talk about for a long time,

NOTE Confidence: 0.73635834

00:14:37.800 --> 00:14:41.582 but it was first synthesized in 1863 and

NOTE Confidence: 0.73635834

00:14:41.582 --> 00:14:45.439 initially it was used as a stabilizer.

NOTE Confidence: 0.73635834

00:14:45.440 --> 00:14:50.480 It was used as a stabilizer for the

NOTE Confidence: 0.73635834

00:14:50.480 --> 00:14:55.156 for the solvents, the DCATCE and DCA,

NOTE Confidence: 0.73635834

00:14:55.160 --> 00:14:57.480 and what happens is this,

NOTE Confidence: 0.73635834

00:14:57.480 --> 00:15:02.240 this solvents, they were covered on.

NOTE Confidence: 0.73635834

00:15:02.240 --> 00:15:03.320 They were.

NOTE Confidence: 0.73635834

00:15:03.320 --> 00:15:06.020 They were transferred on aluminium

NOTE Confidence: 0.73635834

00:15:06.020 --> 00:15:07.652 containers and the aluminum containers,

NOTE Confidence: 0.73635834

00:15:07.652 --> 00:15:08.198 you know,

NOTE Confidence: 0.73635834

00:15:08.200 --> 00:15:10.420 they have a cover inside which

NOTE Confidence: 0.73635834

00:15:10.420 --> 00:15:13.168 is aluminum and they protect from

NOTE Confidence: 0.73635834

00:15:13.168 --> 00:15:15.678 being interacting with the metal.

NOTE Confidence: 0.73635834

00:15:15.680 --> 00:15:18.109 So what happened is after a certain

NOTE Confidence: 0.73635834

00:15:18.109 --> 00:15:20.046 period of time these solvents

NOTE Confidence: 0.73635834

00:15:20.046 --> 00:15:22.506 interact with the metal and they

NOTE Confidence: 0.73635834

00:15:22.506 --> 00:15:24.439 create even toxic products.

NOTE Confidence: 0.73635834

00:15:24.440 --> 00:15:26.925 So what they did is they found

NOTE Confidence: 0.73635834

00:15:26.925 --> 00:15:28.240 out 1.4 dioxane,

NOTE Confidence: 0.73635834

00:15:28.240 --> 00:15:30.640 it could block the catalysis

NOTE Confidence: 0.73635834

00:15:30.640 --> 00:15:32.080 of this reaction.

NOTE Confidence: 0.73635834

00:15:32.080 --> 00:15:34.733 So they were using 1.4 dioxane as

NOTE Confidence: 0.73635834

00:15:34.733 --> 00:15:37.391 a stabilizer of those chemicals not

NOTE Confidence: 0.73635834

00:15:37.391 --> 00:15:40.271 only to protect the toxicity but

NOTE Confidence: 0.73635834

00:15:40.271 --> 00:15:42.919 stabilize the solvents for their use.

NOTE Confidence: 0.73635834

00:15:42.920 --> 00:15:44.768 And what we're using this everything

NOTE Confidence: 0.73635834

00:15:44.768 --> 00:15:46.963 that you can imagine, I'll show you.

NOTE Confidence: 0.73635834

00:15:46.963 --> 00:15:50.280 So it was used as a stabilizer to begin with,

NOTE Confidence: 0.73635834

00:15:50.280 --> 00:15:52.400 but later as you can see from this,

NOTE Confidence: 0.73635834

00:15:52.400 --> 00:15:55.199 it has been used in many in many areas.

NOTE Confidence: 0.73635834

00:15:55.200 --> 00:15:56.920 So this is the uses,

NOTE Confidence: 0.73635834

00:15:56.920 --> 00:15:59.152 I'm not going to go in great details

NOTE Confidence: 0.73635834

00:15:59.152 --> 00:16:01.599 but includes from the stabilizing to medical,

NOTE Confidence: 0.73635834

00:16:01.600 --> 00:16:05.640 pharmaceutical, rubber and plastic industry,

NOTE Confidence: 0.73635834

00:16:05.640 --> 00:16:07.464 printing in and paints,

NOTE Confidence: 0.73635834

00:16:07.464 --> 00:16:09.216 adhesives, brake fluids,

NOTE Confidence: 0.73635834

00:16:09.216 --> 00:16:13.260 brake cleaning fluids and also rust

NOTE Confidence: 0.73635834

00:16:13.260 --> 00:16:16.590 remover and also antifreeze and deicing.

NOTE Confidence: 0.73635834

00:16:16.590 --> 00:16:19.460 The stuff that you they throwing on

NOTE Confidence: 0.73635834

00:16:19.532 --> 00:16:21.814 the airplanes before we take off on

NOTE Confidence: 0.73635834

00:16:21.814 --> 00:16:24.390 this it has 1.4 dioxide quite a bit

NOTE Confidence: 0.73635834

00:16:24.390 --> 00:16:27.617 and what we end up with on the ground.

NOTE Confidence: 0.73635834

00:16:27.617 --> 00:16:30.550 OK so pesticides and some of the

NOTE Confidence: 0.73635834

00:16:30.641 --> 00:16:34.720 pesticides they have up to 50% of

NOTE Confidence: 0.73635834

00:16:34.720 --> 00:16:38.632 1.4 dioxide 50% anyway and also

NOTE Confidence: 0.73635834

00:16:38.632 --> 00:16:40.752 the consumer products we talked

NOTE Confidence: 0.73635834

00:16:40.752 --> 00:16:43.153 about before what is environmental

NOTE Confidence: 0.73635834

00:16:43.153 --> 00:16:46.117 concerns first of all ground water

NOTE Confidence: 0.73635834

00:16:46.117 --> 00:16:48.044 contamination resistance it's as I

NOTE Confidence: 0.73635834

00:16:48.044 --> 00:16:50.980 told you it's it's there it cannot be

NOTE Confidence: 0.73635834

00:16:50.980 --> 00:16:53.680 really degraded easily and can travel.

NOTE Confidence: 0.73635834

00:16:53.680 --> 00:16:56.280 It can travel everywhere toxicity.

NOTE Confidence: 0.73635834

00:16:56.280 --> 00:16:57.000 It's been classified,

NOTE Confidence: 0.73635834

00:16:57.000 --> 00:16:57.960 as I told you,

NOTE Confidence: 0.73635834

00:16:57.960 --> 00:17:00.876 as a possible human carcinogen by

NOTE Confidence: 0.73635834

00:17:00.876 --> 00:17:03.012 both the USEPA and the National

NOTE Confidence: 0.73635834

00:17:03.012 --> 00:17:04.080 engine for Recession.

NOTE Confidence: 0.365910792857143

00:17:04.080 --> 00:17:05.571 Cancer. Regulatory concerns

NOTE Confidence: 0.365910792857143

00:17:05.571 --> 00:17:07.559 are plenty of concerns.

NOTE Confidence: 0.365910792857143

00:17:07.560 --> 00:17:08.840 There is no federal regulation.

NOTE Confidence: 0.365910792857143

00:17:08.840 --> 00:17:10.440 Well, we don't have federal

NOTE Confidence: 0.365910792857143

00:17:10.440 --> 00:17:12.232 regulation yet, even for PFAS.

NOTE Confidence: 0.365910792857143

00:17:12.232 --> 00:17:14.536 And I don't know if you

NOTE Confidence: 0.365910792857143

00:17:14.536 --> 00:17:16.530 watch the movie Dark Waters,

NOTE Confidence: 0.365910792857143

00:17:16.530 --> 00:17:18.720 which I recommend that you do,

NOTE Confidence: 0.365910792857143

00:17:18.720 --> 00:17:20.757 you realize what what I'm talking about?

NOTE Confidence: 0.365910792857143

00:17:20.760 --> 00:17:23.520 About PFAS and regulatory issues.

NOTE Confidence: 0.365910792857143

00:17:23.520 --> 00:17:26.556 So as I told you before,

NOTE Confidence: 0.365910792857143

00:17:26.560 --> 00:17:29.200 what do you find, 1.4 Dioxane.

NOTE Confidence: 0.365910792857143

00:17:29.200 --> 00:17:30.955 You find all the other

NOTE Confidence: 0.365910792857143

00:17:30.955 --> 00:17:32.359 solvents or vice versa.

NOTE Confidence: 0.365910792857143

00:17:32.360 --> 00:17:34.394 It has happened in play many

NOTE Confidence: 0.365910792857143

00:17:34.394 --> 00:17:36.215 places in the United States

NOTE Confidence: 0.365910792857143

00:17:36.215 --> 00:17:39.320 around the Air Force or you know,

NOTE Confidence: 0.365910792857143

00:17:39.320 --> 00:17:40.420 army bases and everywhere.

NOTE Confidence: 0.365910792857143

00:17:40.420 --> 00:17:42.879 And it's not only in the United States,

NOTE Confidence: 0.365910792857143

00:17:42.880 --> 00:17:45.248 even in German Japan,

NOTE Confidence: 0.365910792857143

00:17:45.248 --> 00:17:49.338 China they have found whatever you find

NOTE Confidence: 0.365910792857143

00:17:49.338 --> 00:17:52.732 DC or DCA you will find 1.4 dioxin.

NOTE Confidence: 0.365910792857143

00:17:52.732 --> 00:17:57.040 So you expect to have it also in the rivers,

NOTE Confidence: 0.365910792857143

00:17:57.040 --> 00:18:00.120 in fish and in the drinking water.

NOTE Confidence: 0.365910792857143

00:18:00.120 --> 00:18:03.445 Here is the map from the you CMR 3

NOTE Confidence: 0.365910792857143

00:18:03.445 --> 00:18:07.640 and you can see there are white dots,

NOTE Confidence: 0.365910792857143

00:18:07.640 --> 00:18:09.029 I mean dots,

NOTE Confidence: 0.365910792857143

00:18:09.029 --> 00:18:11.807 Gray dots and red dots and

NOTE Confidence: 0.365910792857143

00:18:11.807 --> 00:18:13.639 essentially this is above,

NOTE Confidence: 0.365910792857143

00:18:13.640 --> 00:18:17.150 below and or around the

NOTE Confidence: 0.365910792857143

00:18:17.150 --> 00:18:19.256 recommendation concentration which

NOTE Confidence: 0.365910792857143

00:18:19.256 --> 00:18:22.400 is .36 micro grams per liter.

NOTE Confidence: 0.365910792857143

00:18:22.400 --> 00:18:24.056 This is a reference dose that

NOTE Confidence: 0.365910792857143

00:18:24.056 --> 00:18:26.141 this is the dose that it can

NOTE Confidence: 0.365910792857143

00:18:26.141 --> 00:18:27.676 cause one cancer per million.

NOTE Confidence: 0.365910792857143

00:18:27.680 --> 00:18:28.220 OK.

NOTE Confidence: 0.365910792857143

00:18:28.220 --> 00:18:30.920 And again this is advisory

NOTE Confidence: 0.365910792857143

00:18:30.920 --> 00:18:32.000 nothing regulatory.

NOTE Confidence: 0.365910792857143

00:18:32.000 --> 00:18:35.438 The areas we have chosen as it was here,

NOTE Confidence: 0.365910792857143

00:18:35.440 --> 00:18:36.912 you cannot believe if

NOTE Confidence: 0.365910792857143

00:18:36.912 --> 00:18:38.752 you live in Long Island,

NOTE Confidence: 0.365910792857143

00:18:38.760 --> 00:18:40.915 public water from Long Island

NOTE Confidence: 0.365910792857143

00:18:40.915 --> 00:18:42.639 comes from well water.

NOTE Confidence: 0.365910792857143

00:18:42.640 --> 00:18:44.080 And most of these areas,

NOTE Confidence: 0.365910792857143

00:18:44.080 --> 00:18:47.118 they're really high levels of 1.4 dioxide.

NOTE Confidence: 0.365910792857143

00:18:47.120 --> 00:18:48.160 And what happened on that?

NOTE Confidence: 0.365910792857143

00:18:48.160 --> 00:18:51.010 Actually Governor Cuomo was very

NOTE Confidence: 0.365910792857143

00:18:51.010 --> 00:18:54.303 strong and put the legislation and

NOTE Confidence: 0.365910792857143

00:18:54.303 --> 00:18:57.119 there is a law in New York now

NOTE Confidence: 0.365910792857143

00:18:57.119 --> 00:18:59.520 that prohibits the manufacturers

NOTE Confidence: 0.365910792857143

00:18:59.520 --> 00:19:03.188 to put 1.4 dioxane in detergents

NOTE Confidence: 0.365910792857143

00:19:03.188 --> 00:19:04.919 and household items.

NOTE Confidence: 0.365910792857143

00:19:04.920 --> 00:19:06.509 Now there is a lawsuit from the

NOTE Confidence: 0.365910792857143

00:19:06.509 --> 00:19:07.720 industry against the government,

NOTE Confidence: 0.365910792857143

00:19:07.720 --> 00:19:08.482 but you know,

NOTE Confidence: 0.365910792857143

00:19:08.482 --> 00:19:10.260 at least they put that and they

NOTE Confidence: 0.365910792857143

00:19:10.319 --> 00:19:12.239 recognize that because everything,

NOTE Confidence: 0.365910792857143

00:19:12.240 --> 00:19:14.517 and I don't have time to go through that,

NOTE Confidence: 0.365910792857143

00:19:14.520 --> 00:19:16.760 your tide, your your shampoo,

NOTE Confidence: 0.365910792857143

00:19:16.760 --> 00:19:17.498 your everything,

NOTE Confidence: 0.365910792857143

00:19:17.498 --> 00:19:20.081 it has 1.4 dioxane and everything is

NOTE Confidence: 0.365910792857143

00:19:20.081 --> 00:19:22.396 going to go down to the water table.

NOTE Confidence: 0.365910792857143

00:19:22.400 --> 00:19:24.560 And especially in Long Island,

NOTE Confidence: 0.365910792857143

00:19:24.560 --> 00:19:27.920 the public water comes from well water.

NOTE Confidence: 0.365910792857143

00:19:27.920 --> 00:19:29.360 So it's a major concern.

NOTE Confidence: 0.365910792857143

00:19:29.360 --> 00:19:31.100 Another area,

NOTE Confidence: 0.365910792857143

00:19:31.100 --> 00:19:34.565 which was one of the reasons that

NOTE Confidence: 0.365910792857143

00:19:34.565 --> 00:19:37.165 NIH had a very strong also thing

NOTE Confidence: 0.365910792857143

00:19:37.165 --> 00:19:40.075 is NIHS locates in North Carolina,

NOTE Confidence: 0.365910792857143

00:19:40.080 --> 00:19:41.454 major, major contamination.

NOTE Confidence: 0.365910792857143

00:19:41.454 --> 00:19:44.660 Also in North Carolina in the Cape

NOTE Confidence: 0.365910792857143

00:19:44.735 --> 00:19:46.800 Fear River is fully contaminated

NOTE Confidence: 0.365910792857143

00:19:46.800 --> 00:19:49.336 and you know it's still getting

NOTE Confidence: 0.365910792857143

00:19:49.336 --> 00:19:51.676 a lot of discharges in there.

NOTE Confidence: 0.365910792857143

00:19:51.680 --> 00:19:53.152 Is it only there?

NOTE Confidence: 0.365910792857143

00:19:53.152 --> 00:19:55.116 No, we have the case of Michigan,

NOTE Confidence: 0.365910792857143

00:19:55.120 --> 00:19:56.680 which I'll explain you later.

NOTE Confidence: 0.365910792857143

00:19:56.680 --> 00:19:58.048 We're working on that.

NOTE Confidence: 0.365910792857143

00:19:58.048 --> 00:20:00.534 Ann Arbor has a major plan of

NOTE Confidence: 0.365910792857143

00:20:00.534 --> 00:20:02.349 1.4 dioxane sitting right there

NOTE Confidence: 0.365910792857143

00:20:02.349 --> 00:20:04.640 and there's a lot of concern.

NOTE Confidence: 0.365910792857143

00:20:04.640 --> 00:20:07.972 New Jersey found out last couple of

NOTE Confidence: 0.365910792857143

00:20:07.972 --> 00:20:12.800 years that the public water had 1.4 dioxane.

NOTE Confidence: 0.365910792857143

00:20:12.800 --> 00:20:14.480 And what happened there is a lawsuit.

NOTE Confidence: 0.365910792857143

00:20:14.480 --> 00:20:16.478 I haven't followed up the details,

NOTE Confidence: 0.365910792857143

00:20:16.480 --> 00:20:19.646 but in March 23 of 2023.

NOTE Confidence: 0.365910792857143

00:20:19.646 --> 00:20:21.876 The water companies shoot the

NOTE Confidence: 0.365910792857143

00:20:21.876 --> 00:20:23.660 manufacturers for putting 1.4

NOTE Confidence: 0.365910792857143

00:20:23.730 --> 00:20:25.238 dioxin into the river,

NOTE Confidence: 0.365910792857143

00:20:25.240 --> 00:20:27.090 which eventually ended up into

NOTE Confidence: 0.365910792857143

00:20:27.090 --> 00:20:28.200 the drinking water.

NOTE Confidence: 0.365910792857143

00:20:28.200 --> 00:20:30.820 So there's a lot of things going on and this

NOTE Confidence: 0.6750126

00:20:30.888 --> 00:20:32.558 is happening just right now.

NOTE Confidence: 0.6750126

00:20:32.560 --> 00:20:35.000 That was again in a different area in

NOTE Confidence: 0.6750126

00:20:35.000 --> 00:20:36.957 North Carolina where they found again

NOTE Confidence: 0.6750126

00:20:39.800 --> 00:20:42.380 1.4 dioxin 1300 times higher

NOTE Confidence: 0.6750126

00:20:42.380 --> 00:20:44.960 compared to the reference level.

NOTE Confidence: 0.6750126

00:20:44.960 --> 00:20:49.020 So what I'm saying is there is a lot of

NOTE Confidence: 0.6750126

00:20:49.020 --> 00:20:51.804 issues in there simply because was not

NOTE Confidence: 0.6750126

00:20:51.804 --> 00:20:54.318 nobody was paying attention before and

NOTE Confidence: 0.6750126

00:20:54.318 --> 00:20:57.146 this is this is something that due to

NOTE Confidence: 0.6750126

00:20:57.146 --> 00:20:59.348 the difficulties in determining that

NOTE Confidence: 0.6750126

00:20:59.348 --> 00:21:02.150 and having the assays but eventually

NOTE Confidence: 0.6750126

00:21:02.227 --> 00:21:04.600 right now there is a major concern.

NOTE Confidence: 0.6750126

00:21:04.600 --> 00:21:08.394 So in terms of toxicity in general

NOTE Confidence: 0.6750126

00:21:08.400 --> 00:21:10.472 most of the toxicity what we know

NOTE Confidence: 0.6750126

00:21:10.472 --> 00:21:12.940 or what we knew and what we're going

NOTE Confidence: 0.6750126

00:21:12.940 --> 00:21:15.600 to do is from liver and kidney OK.

NOTE Confidence: 0.6750126

00:21:15.600 --> 00:21:18.400 But however they have been found that

NOTE Confidence: 0.6750126

00:21:18.400 --> 00:21:21.220 there is some effects also in nasal

NOTE Confidence: 0.6750126

00:21:21.220 --> 00:21:24.730 and eye liver toxist is dose dependent

NOTE Confidence: 0.6750126

00:21:24.730 --> 00:21:26.914 characterized by cell degeneration,

NOTE Confidence: 0.6750126

00:21:26.920 --> 00:21:30.070 preneoplastic lesion development,

NOTE Confidence: 0.6750126

00:21:30.070 --> 00:21:33.139 acid lobular swelling, necrosis,

NOTE Confidence: 0.6750126

00:21:33.139 --> 00:21:35.158 increased DNA synthesis,

NOTE Confidence: 0.6750126

00:21:35.160 --> 00:21:37.692 all the prenea plastic damages that

NOTE Confidence: 0.6750126

00:21:37.692 --> 00:21:40.581 you can see in chromosomal damage

NOTE Confidence: 0.6750126

00:21:40.581 --> 00:21:43.356 and and and enzyme leakage.

NOTE Confidence: 0.6750126

00:21:43.360 --> 00:21:45.766 The kidney toxicity manifests as a

NOTE Confidence: 0.6750126

00:21:45.766 --> 00:21:48.159 generation of the cortical tube cells,

NOTE Confidence: 0.6750126

00:21:48.160 --> 00:21:52.080 tubular tubular neclosis and

NOTE Confidence: 0.6750126

00:21:52.080 --> 00:21:54.040 chloro nephritis.

NOTE Confidence: 0.6750126

00:21:54.040 --> 00:21:56.364 So the other thing that we have

NOTE Confidence: 0.6750126

00:21:56.364 --> 00:21:58.785 discovered in our and which I think

NOTE Confidence: 0.6750126

00:21:58.785 --> 00:22:01.110 it could be very disturbing but is

NOTE Confidence: 0.6750126

00:22:01.110 --> 00:22:03.315 that we found out that there is

NOTE Confidence: 0.6750126

00:22:03.315 --> 00:22:05.762 a potential disruption of glucose

NOTE Confidence: 0.6750126

00:22:05.762 --> 00:22:08.834 homeostasis at least in our mice.

NOTE Confidence: 0.6750126

00:22:08.840 --> 00:22:10.880 But again, it's not published.

NOTE Confidence: 0.6750126

00:22:10.880 --> 00:22:13.664 We have it here.

NOTE Confidence: 0.6750126

00:22:13.664 --> 00:22:16.160 So the studies and I'm not going to go,

NOTE Confidence: 0.6750126

00:22:16.160 --> 00:22:19.156 I can bypass because time is running.

NOTE Confidence: 0.6750126

00:22:19.160 --> 00:22:20.040 There are a lot of,

NOTE Confidence: 0.6750126

00:22:20.040 --> 00:22:22.609 a lot of experiments both in mice

NOTE Confidence: 0.6750126

00:22:22.609 --> 00:22:25.582 and rats in over the two years that

NOTE Confidence: 0.6750126

00:22:25.582 --> 00:22:28.360 it is a proven liver carcinogen.

NOTE Confidence: 0.6750126

00:22:28.360 --> 00:22:31.657 And you know it has been shown

NOTE Confidence: 0.6750126

00:22:31.657 --> 00:22:34.576 that you know it is occurring in

NOTE Confidence: 0.6750126

00:22:34.576 --> 00:22:36.716 various labs throughout the year,

NOTE Confidence: 0.6750126

00:22:36.720 --> 00:22:38.560 throughout the globe and they

NOTE Confidence: 0.6750126

00:22:38.560 --> 00:22:40.032 found the same thing.

NOTE Confidence: 0.6750126

00:22:40.040 --> 00:22:42.623 So one of the thing though that it was

NOTE Confidence: 0.6750126

00:22:42.623 --> 00:22:45.718 a little bit puzzling is when they took,

NOTE Confidence: 0.6750126

00:22:45.720 --> 00:22:47.176 they did the genotoxicity.

NOTE Confidence: 0.6750126

00:22:47.176 --> 00:22:50.173 In other words they did the aims test

NOTE Confidence: 0.6750126

00:22:50.173 --> 00:22:52.399 or sister comma the exchange test.

NOTE Confidence: 0.6750126

00:22:52.400 --> 00:22:54.640 They couldn't find any genotoxicity

NOTE Confidence: 0.6750126

00:22:54.640 --> 00:22:56.432 for this 1.4 dioxin.

NOTE Confidence: 0.6750126

00:22:56.440 --> 00:22:58.240 So they said well it's not the mutagen,

NOTE Confidence: 0.6750126

00:22:58.240 --> 00:22:59.368 maybe it's a promoter.

NOTE Confidence: 0.6750126

00:22:59.368 --> 00:23:01.839 As you can see on the 4th bullet,

NOTE Confidence: 0.6750126

00:23:01.840 --> 00:23:02.225 well,

NOTE Confidence: 0.6750126

00:23:02.225 --> 00:23:04.535 there is a published study published

NOTE Confidence: 0.6750126

00:23:04.535 --> 00:23:07.020 last year by a Japanese group

NOTE Confidence: 0.6750126

00:23:07.020 --> 00:23:10.110 that indicates that 1.4 dioxin can

NOTE Confidence: 0.6750126

00:23:10.110 --> 00:23:13.160 induce DNA adducts as well.

NOTE Confidence: 0.6750126

00:23:13.160 --> 00:23:15.560 OK, and they're going on that.

NOTE Confidence: 0.6750126

00:23:15.560 --> 00:23:17.996 But what really triggered my interest

NOTE Confidence: 0.6750126

00:23:17.996 --> 00:23:20.687 and this is what really reflects

NOTE Confidence: 0.6750126

00:23:20.687 --> 00:23:23.704 essentially the mode of action of

NOTE Confidence: 0.6750126

00:23:23.704 --> 00:23:27.512 1.4 dioxane is what they did is

NOTE Confidence: 0.6750126

00:23:27.512 --> 00:23:30.528 they took genotoxic carcinogens

NOTE Confidence: 0.6750126

00:23:30.528 --> 00:23:33.625 not genotoxic carcinogens in 1.4

NOTE Confidence: 0.6750126

00:23:33.625 --> 00:23:35.695 dioxane and they did the studies

NOTE Confidence: 0.6750126

00:23:35.695 --> 00:23:37.439 in both mice and rats.

NOTE Confidence: 0.6750126

00:23:37.440 --> 00:23:39.798 They measured the RNA sick and

NOTE Confidence: 0.6750126

00:23:39.798 --> 00:23:42.734 they try to make sense if 1.4

NOTE Confidence: 0.6750126

00:23:42.734 --> 00:23:45.723 dioxin belongs to one or the other

NOTE Confidence: 0.6750126

00:23:45.723 --> 00:23:48.518 group based on gene expression.

NOTE Confidence: 0.6750126

00:23:48.520 --> 00:23:50.172 And what they found as you can

NOTE Confidence: 0.6750126

00:23:50.172 --> 00:23:52.200 see from the from the slides

NOTE Confidence: 0.6750126

00:23:52.200 --> 00:23:54.840 1.4 dioxin is a distinct form.

NOTE Confidence: 0.6750126

00:23:54.840 --> 00:23:57.616 So in other words it's it's does not

NOTE Confidence: 0.6750126

00:23:57.616 --> 00:24:00.128 belong to any of these two models

NOTE Confidence: 0.6750126

00:24:00.128 --> 00:24:02.776 which I thought it was very interesting

NOTE Confidence: 0.6750126

00:24:02.776 --> 00:24:05.226 and it was worth of exploring.

NOTE Confidence: 0.6750126

00:24:05.226 --> 00:24:08.588 So let's go and see what we're doing.

NOTE Confidence: 0.6750126

00:24:08.588 --> 00:24:11.270 So our Project 1 briefly goes

NOTE Confidence: 0.6553215

00:24:11.361 --> 00:24:14.076 on liver cancer and biomarkers.

NOTE Confidence: 0.6553215

00:24:14.080 --> 00:24:17.900 So essentially we're trying to use mouse

NOTE Confidence: 0.6553215

00:24:17.900 --> 00:24:21.400 models, human cells and organization,

NOTE Confidence: 0.6553215

00:24:21.400 --> 00:24:24.520 also zebra fish to dissect the

NOTE Confidence: 0.6553215

00:24:24.520 --> 00:24:27.280 molecular mechanisms of causing cancer.

NOTE Confidence: 0.6553215

00:24:27.280 --> 00:24:29.560 That's what the Project one does.

NOTE Confidence: 0.6553215

00:24:29.560 --> 00:24:32.199 The project Two, as I told you,

NOTE Confidence: 0.6553215

00:24:32.200 --> 00:24:35.256 there is no epidemiological study on,

NOTE Confidence: 0.6553215

00:24:35.256 --> 00:24:37.724 you know, on on 1.4 dioxin.

NOTE Confidence: 0.6553215

00:24:37.724 --> 00:24:39.656 And this was the major obstacle

NOTE Confidence: 0.6553215

00:24:39.656 --> 00:24:42.815 that I had to go through for the

NOTE Confidence: 0.6553215

00:24:42.815 --> 00:24:44.039 resubmission because everybody,

NOTE Confidence: 0.6553215

00:24:44.040 --> 00:24:46.630 when I was putting the stuff about

NOTE Confidence: 0.6553215

00:24:46.630 --> 00:24:48.359 carcinogenist, they said, well,

NOTE Confidence: 0.6553215

00:24:48.359 --> 00:24:50.448 we don't have epidemiological status.

NOTE Confidence: 0.6553215

00:24:50.448 --> 00:24:52.996 Well, somebody has to do it anyway.

NOTE Confidence: 0.6553215

00:24:53.000 --> 00:24:54.116 To make a Long story short,

NOTE Confidence: 0.6553215

00:24:54.120 --> 00:24:57.155 the budget of this project, it's not huge.

NOTE Confidence: 0.6553215

00:24:57.155 --> 00:25:00.399 So we did not have money to do

NOTE Confidence: 0.6553215

00:25:00.399 --> 00:25:01.518 the epidemiological studies.

NOTE Confidence: 0.6553215

00:25:01.520 --> 00:25:03.676 However, the NIHS said we do want

NOTE Confidence: 0.6553215

00:25:03.676 --> 00:25:06.039 you to do something about it.

NOTE Confidence: 0.6553215

00:25:06.040 --> 00:25:10.004 So what we decided was exposure assessment.

NOTE Confidence: 0.6553215

00:25:10.004 --> 00:25:12.914 So in other words epidemiological

NOTE Confidence: 0.6553215

00:25:12.914 --> 00:25:16.502 studies in much less number of samples.

NOTE Confidence: 0.6553215

00:25:16.502 --> 00:25:19.346 So the Project 3 is something

NOTE Confidence: 0.6553215

00:25:19.346 --> 00:25:22.285 that we're trying to detect the

NOTE Confidence: 0.6553215

00:25:22.285 --> 00:25:24.310 1.4 dioxin and Co contaminants

NOTE Confidence: 0.6553215

00:25:24.310 --> 00:25:26.440 in areas that they're there.

NOTE Confidence: 0.6553215

00:25:26.440 --> 00:25:29.368 My whole idea in here is can we

NOTE Confidence: 0.6553215

00:25:29.368 --> 00:25:31.916 develop a system that it can be

NOTE Confidence: 0.6553215

00:25:31.916 --> 00:25:34.798 online that you can monitor the area,

NOTE Confidence: 0.6553215

00:25:34.800 --> 00:25:37.621 do the bio monitoring from your computer

NOTE Confidence: 0.6553215

00:25:37.621 --> 00:25:41.515 or the EPA can you know get the information.

NOTE Confidence: 0.6553215

00:25:41.520 --> 00:25:42.920 It's a difficult task.

NOTE Confidence: 0.36653194

00:25:45.200 --> 00:25:46.336 Many eliminated Jordan patio

NOTE Confidence: 0.36653194

00:25:46.336 --> 00:25:48.337 that when I talked to them about

NOTE Confidence: 0.36653194

00:25:48.337 --> 00:25:49.795 they said I cannot be done.

NOTE Confidence: 0.36653194

00:25:49.800 --> 00:25:51.515 Anyway, to make a Long story short,

NOTE Confidence: 0.36653194

00:25:51.520 --> 00:25:52.678 I'll show you what we're doing

NOTE Confidence: 0.36653194

00:25:52.678 --> 00:25:54.000 and we're trying to develop that,

NOTE Confidence: 0.36653194

00:25:54.000 --> 00:25:57.290 but the the idea of having those

NOTE Confidence: 0.36653194

00:25:57.290 --> 00:25:59.668 sensors is really hot right now in

NOTE Confidence: 0.36653194

00:25:59.668 --> 00:26:01.758 all the aspects that you can do.

NOTE Confidence: 0.36653194

00:26:01.760 --> 00:26:04.120 Finally, the project for as I told you,

NOTE Confidence: 0.36653194

00:26:04.120 --> 00:26:07.480 and this is another very important project,

NOTE Confidence: 0.36653194

00:26:07.480 --> 00:26:09.840 is how we can degrade.

NOTE Confidence: 0.36653194

00:26:09.840 --> 00:26:11.880 So you're well watered,

NOTE Confidence: 0.36653194

00:26:11.880 --> 00:26:14.560 most likely might have 1.4 dioxide.

NOTE Confidence: 0.36653194

00:26:14.560 --> 00:26:16.160 I'm not saying it does,

NOTE Confidence: 0.36653194

00:26:16.160 --> 00:26:18.797 but if it does, how you can purify it?

NOTE Confidence: 0.36653194

00:26:18.800 --> 00:26:21.600 Well, you can purify it with reverse osmosis,

NOTE Confidence: 0.36653194

00:26:21.600 --> 00:26:24.334 but do you have $15,000 to?

NOTE Confidence: 0.36653194

00:26:24.334 --> 00:26:26.296 So it's just for reduce versus

NOTE Confidence: 0.36653194

00:26:26.296 --> 00:26:27.719 Moses on your water.

NOTE Confidence: 0.36653194

00:26:27.720 --> 00:26:29.760 And some people may afford it,

NOTE Confidence: 0.36653194

00:26:29.760 --> 00:26:31.480 but how about the people that they cannot?

NOTE Confidence: 0.36653194

00:26:31.480 --> 00:26:32.920 We're talking about environmental

NOTE Confidence: 0.36653194

00:26:32.920 --> 00:26:34.000 justice as well.

NOTE Confidence: 0.36653194

00:26:34.000 --> 00:26:35.680 So there's a lot of issues that

NOTE Confidence: 0.36653194

00:26:35.680 --> 00:26:37.439 need to be discussing there.

NOTE Confidence: 0.36653194

00:26:37.440 --> 00:26:39.660 So that's Project 4.

NOTE Confidence: 0.36653194

00:26:39.660 --> 00:26:41.880 And the Project 4,

NOTE Confidence: 0.36653194

00:26:41.880 --> 00:26:43.385 essentially what it tries to

NOTE Confidence: 0.36653194

00:26:43.385 --> 00:26:45.755 do is trying to use what we

NOTE Confidence: 0.36653194

00:26:45.755 --> 00:26:46.958 call advanced oxidation,

NOTE Confidence: 0.36653194

00:26:46.960 --> 00:26:48.600 which is essentially oxidative stress.

NOTE Confidence: 0.36653194

00:26:48.600 --> 00:26:50.767 And I have more slides to show you,

NOTE Confidence: 0.36653194

00:26:50.767 --> 00:26:52.720 but I want to give you the big picture.

NOTE Confidence: 0.36653194

00:26:52.720 --> 00:26:55.835 So you try to utilize hydrogen peroxide,

NOTE Confidence: 0.36653194

00:26:55.840 --> 00:26:58.040 you break the hydrogen peroxide,

NOTE Confidence: 0.36653194

00:26:58.040 --> 00:27:00.265 you create reactive oxygen species

NOTE Confidence: 0.36653194

00:27:00.265 --> 00:27:03.022 and then the reactive oxygen species

NOTE Confidence: 0.36653194

00:27:03.022 --> 00:27:05.317 that can degrade your chemical.

NOTE Confidence: 0.36653194

00:27:05.320 --> 00:27:07.896 And this is also we're trying to do

NOTE Confidence: 0.36653194

00:27:07.896 --> 00:27:09.638 something similar with PFS as well.

NOTE Confidence: 0.36653194

00:27:09.640 --> 00:27:11.397 But anyway, this is of the record.

NOTE Confidence: 0.36653194

00:27:11.400 --> 00:27:12.318 Let's go for

NOTE Confidence: 0.5781793

00:27:14.920 --> 00:27:15.480 project One.

NOTE Confidence: 0.5781793

00:27:15.480 --> 00:27:17.440 This is the theme that we have.

NOTE Confidence: 0.5781793

00:27:17.440 --> 00:27:19.678 Essentially Yin Chen leads that I'm

NOTE Confidence: 0.5781793

00:27:19.678 --> 00:27:23.084 a Co leader, but I'm following her.

NOTE Confidence: 0.5781793

00:27:23.084 --> 00:27:24.797 That's her project.

NOTE Confidence: 0.5781793

00:27:24.800 --> 00:27:27.201 And we have of course Georgia from

NOTE Confidence: 0.5781793

00:27:27.201 --> 00:27:29.560 from and other people in the lab.

NOTE Confidence: 0.5781793

00:27:29.560 --> 00:27:31.480 And this is in collaboration

NOTE Confidence: 0.5781793

00:27:31.480 --> 00:27:33.016 with the National Toxicology

NOTE Confidence: 0.5781793

00:27:33.016 --> 00:27:34.759 Program with Stephen Ferguson,

NOTE Confidence: 0.5781793

00:27:34.760 --> 00:27:37.940 who is doing the human

NOTE Confidence: 0.5781793

00:27:37.940 --> 00:27:41.120 Hepatocytes and also the human,

NOTE Confidence: 0.5781793

00:27:41.120 --> 00:27:43.350 the 3D structures of the of

NOTE Confidence: 0.5781793

00:27:43.350 --> 00:27:45.240 the of the human cells that we

NOTE Confidence: 0.5781793

00:27:45.240 --> 00:27:47.207 can do the organoids and we

NOTE Confidence: 0.5781793

00:27:47.207 --> 00:27:49.235 can test 1.4 dioxin in there.

NOTE Confidence: 0.5781793

00:27:49.240 --> 00:27:51.004 So what we do here at the

NOTE Confidence: 0.5781793

00:27:51.004 --> 00:27:52.599 Yale and I'll show you is,

NOTE Confidence: 0.5781793

00:27:52.600 --> 00:27:54.556 is we're doing the mouse work.

NOTE Confidence: 0.5781793

00:27:54.560 --> 00:27:55.640 So NTP,

NOTE Confidence: 0.5781793

00:27:55.640 --> 00:27:58.340 National Toxicology Program is helping

NOTE Confidence: 0.5781793

00:27:58.340 --> 00:28:01.758 us with determining the effects on cells.

NOTE Confidence: 0.5781793

00:28:01.760 --> 00:28:04.917 And Robin Tanway from Ohio State University,

NOTE Confidence: 0.5781793

00:28:04.920 --> 00:28:07.440 which I was there 10 days ago,

NOTE Confidence: 0.5781793

00:28:07.440 --> 00:28:10.734 they're evaluating our 1.4 dioxin but

NOTE Confidence: 0.5781793

00:28:10.734 --> 00:28:14.003 most importantly the mixtures with the

NOTE Confidence: 0.5781793

00:28:14.003 --> 00:28:16.214 other Co contaminants on zebrafish.

NOTE Confidence: 0.5781793

00:28:16.214 --> 00:28:19.150 Why we do that because to do that

NOTE Confidence: 0.5781793

00:28:19.230 --> 00:28:22.784 in mice you need you know about

NOTE Confidence: 0.5781793

00:28:22.784 --> 00:28:26.672 20 fold budget and much more

NOTE Confidence: 0.5781793

00:28:26.672 --> 00:28:30.200 time to evaluate that in mice.

NOTE Confidence: 0.5781793

00:28:30.200 --> 00:28:33.259 So zebrafish in an is an amazing

NOTE Confidence: 0.5781793

00:28:33.259 --> 00:28:37.053 tool and actually his here facility

NOTE Confidence: 0.5781793

00:28:37.053 --> 00:28:39.384 up in Oregon State for the zebra

NOTE Confidence: 0.5781793

00:28:39.384 --> 00:28:41.312 fish screening and especially the

NOTE Confidence: 0.5781793

00:28:41.312 --> 00:28:43.317 exposomic studies is truly amazing.

NOTE Confidence: 0.5781793

00:28:43.320 --> 00:28:45.728 So we take advantage of that and

NOTE Confidence: 0.5781793

00:28:45.728 --> 00:28:47.840 actually we're not restricting the

NOTE Confidence: 0.5781793

00:28:47.840 --> 00:28:49.668 science only to carcinogenicity,

NOTE Confidence: 0.5781793

00:28:49.668 --> 00:28:53.315 but we're also doing a lot of stuff

NOTE Confidence: 0.5781793

00:28:53.315 --> 00:28:55.370 for behavioral stuff and also

NOTE Confidence: 0.5781793

00:28:55.370 --> 00:28:58.368 for that could have an effect on

NOTE Confidence: 0.5781793

00:28:58.368 --> 00:29:00.478 mental issues of this compound.

NOTE Confidence: 0.5781793

00:29:00.480 --> 00:29:02.526 So what we really know again

NOTE Confidence: 0.5781793

00:29:02.526 --> 00:29:04.559 this is I'm going to pass,

NOTE Confidence: 0.5781793

00:29:04.560 --> 00:29:06.716 I have covered that quite a bit.

NOTE Confidence: 0.5781793

00:29:06.720 --> 00:29:08.240 We know that causes cancer.

NOTE Confidence: 0.5781793

00:29:08.240 --> 00:29:10.840 We don't know the mechanism 1.4

NOTE Confidence: 0.5781793

00:29:10.840 --> 00:29:13.720 dioxin is a carcinogen in mice.

NOTE Confidence: 0.5781793

00:29:13.720 --> 00:29:15.556 We don't know what what is

NOTE Confidence: 0.5781793

00:29:15.556 --> 00:29:17.479 doing and what is going on.

NOTE Confidence: 0.5781793

00:29:17.480 --> 00:29:19.352 So what we're doing,

NOTE Confidence: 0.5781793

00:29:19.352 --> 00:29:21.368 so we're doing animal study,

NOTE Confidence: 0.5781793

00:29:21.368 --> 00:29:22.888 we're not just repeating what

NOTE Confidence: 0.5781793

00:29:22.888 --> 00:29:24.520 it has been done before,

NOTE Confidence: 0.5781793

00:29:24.520 --> 00:29:27.072 but we're trying to use knockout animal

NOTE Confidence: 0.5781793

00:29:27.072 --> 00:29:30.880 models that will have an effect on on this.

NOTE Confidence: 0.5781793

00:29:30.880 --> 00:29:34.506 So we're using models on oxidative stress

NOTE Confidence: 0.5781793

00:29:34.506 --> 00:29:37.080 and I will give you the examples in here.

NOTE Confidence: 0.5781793

00:29:37.080 --> 00:29:39.978 But essentially the first part is we're

NOTE Confidence: 0.5781793

00:29:39.978 --> 00:29:43.516 using mice and we do high dose and low dose.

NOTE Confidence: 0.5781793

00:29:43.520 --> 00:29:45.554 For the high dose is to get the effect,

NOTE Confidence: 0.5781793

00:29:45.560 --> 00:29:49.480 low dose is to mimic the human exposures.

NOTE Confidence: 0.5781793

00:29:49.480 --> 00:29:51.520 And from there we're doing the

NOTE Confidence: 0.5781793

00:29:51.520 --> 00:29:53.274 Omics based system approach,

NOTE Confidence: 0.5781793

00:29:53.274 --> 00:29:55.959 we're doing the RNA transcriptome,

NOTE Confidence: 0.5781793

00:29:55.960 --> 00:29:58.215 the metabolomics and also the

NOTE Confidence: 0.5781793

00:29:58.215 --> 00:30:00.856 phenotyping of this mice and we

NOTE Confidence: 0.5781793

00:30:00.856 --> 00:30:03.272 have quite a bit of data so far.

NOTE Confidence: 0.5781793

00:30:03.280 --> 00:30:06.388 So then we'll combine this on using

NOTE Confidence: 0.5781793

00:30:06.388 --> 00:30:08.720 deep learning, doing the RNA 6,

NOTE Confidence: 0.5781793

00:30:08.720 --> 00:30:10.520 the metabolomics and you know

NOTE Confidence: 0.5781793

00:30:10.520 --> 00:30:11.880 also the clinical,

NOTE Confidence: 0.5781793

00:30:11.880 --> 00:30:12.888 the not clinical,

NOTE Confidence: 0.5781793

00:30:12.888 --> 00:30:14.904 the phenotyping things and we're trying

NOTE Confidence: 0.5781793

00:30:14.904 --> 00:30:16.916 to determine the mode of action,

NOTE Confidence: 0.5781793

00:30:16.920 --> 00:30:19.538 the MOA and also the exposure and

NOTE Confidence: 0.5781793

00:30:19.538 --> 00:30:21.020 toxicity biomarkers which we're

NOTE Confidence: 0.5781793

00:30:21.020 --> 00:30:23.099 going to feed the project to when

NOTE Confidence: 0.5781793

00:30:23.099 --> 00:30:25.158 they do the exposure analysis.

NOTE Confidence: 0.5781793

00:30:25.160 --> 00:30:28.268 I told you before that we also

NOTE Confidence: 0.5781793

00:30:28.268 --> 00:30:31.750 using the the HEPA RG cells with

NOTE Confidence: 0.5781793

00:30:31.750 --> 00:30:35.958 NTP and the zebra fish for the AM 3.

NOTE Confidence: 0.5781793

00:30:35.960 --> 00:30:38.120 Here is a little bit of

NOTE Confidence: 0.5123129

00:30:38.120 --> 00:30:40.731 of the what we know and what

NOTE Confidence: 0.5123129

00:30:40.731 --> 00:30:42.920 we're currently know regarding the

NOTE Confidence: 0.5123129

00:30:42.920 --> 00:30:45.280 the metabolism of 1.4 dioxane.

NOTE Confidence: 0.5123129

00:30:45.280 --> 00:30:48.313 One of the thing I want to take your

NOTE Confidence: 0.5123129

00:30:48.320 --> 00:30:50.080 I want to have your attention to it.

NOTE Confidence: 0.5123129

00:30:50.080 --> 00:30:53.240 It is metabolized by cytochrome P452U1.

NOTE Confidence: 0.5123129

00:30:53.240 --> 00:30:54.840 Why this is important?

NOTE Confidence: 0.5123129

00:30:54.840 --> 00:30:58.593 Because cytochrome P452U1 is the

NOTE Confidence: 0.5123129

00:30:58.593 --> 00:31:01.197 activator of many carcinogens,

NOTE Confidence: 0.5123129

00:31:01.200 --> 00:31:05.720 many what we call precarcinogens to

NOTE Confidence: 0.5123129

00:31:05.720 --> 00:31:07.748 very active intermediates that they can

NOTE Confidence: 0.5123129

00:31:07.748 --> 00:31:10.160 cause cancer that can interact with DNA.

NOTE Confidence: 0.5123129

00:31:10.160 --> 00:31:12.432 So as you can see on the right

NOTE Confidence: 0.5123129

00:31:12.432 --> 00:31:14.532 hand side you can see also you

NOTE Confidence: 0.5123129

00:31:14.532 --> 00:31:17.280 have the TCe and the PCE which have

NOTE Confidence: 0.5123129

00:31:17.280 --> 00:31:19.710 the solvents which can also be

NOTE Confidence: 0.5123129

00:31:19.710 --> 00:31:21.125 metabolized by cytochrome P452.

NOTE Confidence: 0.5123129

00:31:21.125 --> 00:31:23.935 I want you to keep that in mind

NOTE Confidence: 0.5123129

00:31:23.935 --> 00:31:25.875 because what we have found,

NOTE Confidence: 0.5123129

00:31:25.880 --> 00:31:28.036 it's something that I think we have

NOTE Confidence: 0.5123129

00:31:28.036 --> 00:31:29.839 explained some of these effects.

NOTE Confidence: 0.5123129

00:31:29.840 --> 00:31:31.420 So we've we've already

NOTE Confidence: 0.5123129

00:31:31.420 --> 00:31:33.395 published quite a few papers.

NOTE Confidence: 0.5123129

00:31:33.400 --> 00:31:34.600 In terms of the mechanism,

NOTE Confidence: 0.5123129

00:31:34.600 --> 00:31:36.720 I wish I had too much time to show you,

NOTE Confidence: 0.5123129

00:31:36.720 --> 00:31:39.499 but one of the major findings that

NOTE Confidence: 0.5123129

00:31:39.499 --> 00:31:42.548 we did and nobody has shown that

NOTE Confidence: 0.5123129

00:31:42.548 --> 00:31:46.120 before is we found that 1.4 dioxane

NOTE Confidence: 0.5123129

00:31:46.120 --> 00:31:49.760 induced the cytochrome P452E1.

NOTE Confidence: 0.5123129

00:31:49.760 --> 00:31:51.800 And why this is important?

NOTE Confidence: 0.5123129

00:31:51.800 --> 00:31:55.640 Because if you have a Co exposure of

NOTE Confidence: 0.5123129

00:31:55.640 --> 00:31:57.770 cytochrome P452E1 and trichloroethylene

NOTE Confidence: 0.5123129

00:31:57.770 --> 00:32:00.520 or diethyl nitrozamine in your

NOTE Confidence: 0.5123129

00:32:00.520 --> 00:32:02.758 cigarette smoke or in, you know,

NOTE Confidence: 0.5123129

00:32:02.758 --> 00:32:04.952 in the smoke food that you eat,

NOTE Confidence: 0.5123129

00:32:04.952 --> 00:32:06.860 then you have higher chances of

NOTE Confidence: 0.5123129

00:32:06.931 --> 00:32:08.687 metabolizing the procarcinosis to

NOTE Confidence: 0.5123129

00:32:08.687 --> 00:32:11.840 carcinosis and they can cause liver cancer.

NOTE Confidence: 0.5123129

00:32:11.840 --> 00:32:13.352 So in other words,

NOTE Confidence: 0.5123129

00:32:13.352 --> 00:32:16.284 it can act as a promoter by

NOTE Confidence: 0.5123129

00:32:16.284 --> 00:32:19.012 inducing the cytochrome P452E1 in

NOTE Confidence: 0.5123129

00:32:19.012 --> 00:32:21.257 addition to the cytochrome P452E1.

NOTE Confidence: 0.5123129

00:32:21.257 --> 00:32:22.993 And you can see it in your left.

NOTE Confidence: 0.5123129

00:32:23.000 --> 00:32:25.424 We find that there is increased

NOTE Confidence: 0.5123129

00:32:25.424 --> 00:32:27.476 oxidative stress as indicated with

NOTE Confidence: 0.5123129

00:32:27.476 --> 00:32:30.066 four hydroxynone anal and also with the

NOTE Confidence: 0.5123129

00:32:30.066 --> 00:32:32.092 increase of the quinone oxidoridactase,

NOTE Confidence: 0.5123129

00:32:32.092 --> 00:32:35.128 which is a gene involved in

NOTE Confidence: 0.5123129

00:32:35.128 --> 00:32:39.160 the antioxidant response.

NOTE Confidence: 0.5123129

00:32:39.160 --> 00:32:42.556 So I apologize this happens again.

NOTE Confidence: 0.5123129

00:32:42.560 --> 00:32:45.648 You know the the image becomes a little

NOTE Confidence: 0.5123129

00:32:45.648 --> 00:32:48.866 bit but what the highlights of our

NOTE Confidence: 0.5123129

00:32:48.866 --> 00:32:51.480 research are this and this happens to me.

NOTE Confidence: 0.5123129

00:32:51.480 --> 00:32:53.728 I don't know why this but I have

NOTE Confidence: 0.5123129

00:32:53.728 --> 00:32:55.640 another one that I can show you.

NOTE Confidence: 0.5123129

00:32:55.640 --> 00:32:58.403 But we have find out so far that there

NOTE Confidence: 0.5123129

00:32:58.403 --> 00:33:01.030 is a direct xenotoxic effect for

NOTE Confidence: 0.5123129

00:33:01.030 --> 00:33:03.060 dioxin that includes oxidative stress.

NOTE Confidence: 0.5123129

00:33:03.060 --> 00:33:05.376 We already published that in 2022.

NOTE Confidence: 0.5123129

00:33:05.376 --> 00:33:08.064 There is a dominant role of two one

NOTE Confidence: 0.5123129

00:33:08.064 --> 00:33:11.478 in the metabolism as we have found by

NOTE Confidence: 0.5123129

00:33:11.478 --> 00:33:14.597 metabolomics and also for the liver toxicity.

NOTE Confidence: 0.5123129

00:33:14.600 --> 00:33:20.300 But also we have not only

NOTE Confidence: 0.5123129

00:33:20.300 --> 00:33:21.920 the induction of 2 E one,

NOTE Confidence: 0.5123129

00:33:21.920 --> 00:33:25.816 we have found the 2nd mechanism which is

NOTE Confidence: 0.5123129

00:33:25.816 --> 00:33:28.193 completely independent of Cytochrome B452E1.

NOTE Confidence: 0.5123129

00:33:28.193 --> 00:33:29.758 How do we do that?

NOTE Confidence: 0.5123129

00:33:29.760 --> 00:33:33.015 We're using knockouts that they have not

NOTE Confidence: 0.5123129

00:33:33.015 --> 00:33:36.080 Cytochrome B451 and we determined that.

NOTE Confidence: 0.5123129

00:33:36.080 --> 00:33:38.198 So this is what we're doing.

NOTE Confidence: 0.5123129

00:33:38.200 --> 00:33:41.280 Specific aim one and specific aim 2

NOTE Confidence: 0.5123129

00:33:41.280 --> 00:33:45.036 is we're using knockout mice and again

NOTE Confidence: 0.5123129

00:33:45.036 --> 00:33:47.199 remember we have the metabolism here.

NOTE Confidence: 0.5123129

00:33:47.200 --> 00:33:50.049 As you can see Cytochrome B450 is

NOTE Confidence: 0.5123129

00:33:50.049 --> 00:33:52.679 metabolized the first two animal models,

NOTE Confidence: 0.5123129

00:33:52.680 --> 00:33:56.677 the GCLM knockout is a model of

NOTE Confidence: 0.5123129

00:33:56.680 --> 00:33:59.160 mice that has low glutathione

NOTE Confidence: 0.5123129

00:33:59.160 --> 00:34:01.640 levels so that animal model,

NOTE Confidence: 0.5123129

00:34:01.640 --> 00:34:04.480 it has low antioxidant capacity.

NOTE Confidence: 0.5123129

00:34:04.480 --> 00:34:07.088 Nerf 2 knockout model is the Nerf two

NOTE Confidence: 0.5123129

00:34:07.088 --> 00:34:10.080 is a transcription factor involved

NOTE Confidence: 0.27478766

00:34:10.080 --> 00:34:11.930 in all the genes involving

NOTE Confidence: 0.27478766

00:34:11.930 --> 00:34:13.040 done dioxidant response.

NOTE Confidence: 0.27478766

00:34:13.040 --> 00:34:15.840 So if the nerve 2 gets activated,

NOTE Confidence: 0.27478766

00:34:15.840 --> 00:34:19.640 your cell becomes really active.

NOTE Confidence: 0.27478766

00:34:19.640 --> 00:34:22.377 Against the insults and we try we

NOTE Confidence: 0.27478766

00:34:22.377 --> 00:34:24.440 you we're currently using that,

NOTE Confidence: 0.27478766

00:34:24.440 --> 00:34:27.120 we're doing the experiments and to do that.

NOTE Confidence: 0.27478766

00:34:27.120 --> 00:34:30.130 So we're also using the cytochrome P4

NOTE Confidence: 0.27478766

00:34:30.130 --> 00:34:33.045 phase E2E1 As I said we completed those

NOTE Confidence: 0.27478766

00:34:33.045 --> 00:34:35.815 studies actually and we're using the NQ

NOTE Confidence: 0.27478766

00:34:35.815 --> 00:34:38.080 one and also the aldehydehydrogenase 2.

NOTE Confidence: 0.27478766

00:34:38.080 --> 00:34:41.343 As you can see the Ald H2 could

NOTE Confidence: 0.27478766

00:34:41.343 --> 00:34:42.669 be involved in the last steps

NOTE Confidence: 0.27478766

00:34:42.669 --> 00:34:44.079 of the metabolism of that.

NOTE Confidence: 0.27478766

00:34:44.080 --> 00:34:47.620 And you know the Ald H2 is a gene that

NOTE Confidence: 0.27478766

00:34:47.720 --> 00:34:50.905 has it's highly polymorphic in a lot

NOTE Confidence: 0.27478766

00:34:50.905 --> 00:34:56.200 of individuals especially those in from

NOTE Confidence: 0.27478766

00:34:56.200 --> 00:35:00.155 the from Asian population quite a bit.

NOTE Confidence: 0.27478766

00:35:00.160 --> 00:35:02.998 So Project 2 is the exposure

NOTE Confidence: 0.27478766

00:35:02.998 --> 00:35:06.419 assessment team led by Co led by

NOTE Confidence: 0.27478766

00:35:06.419 --> 00:35:08.799 Nicole Diesel and Brian Litter.

NOTE Confidence: 0.27478766

00:35:08.800 --> 00:35:11.203 And we have also most of our people from

NOTE Confidence: 0.27478766

00:35:11.203 --> 00:35:13.479 our department in exposures Crystal,

NOTE Confidence: 0.27478766

00:35:13.480 --> 00:35:15.060 Pollet, Zhai and Lu.

NOTE Confidence: 0.27478766

00:35:15.060 --> 00:35:17.035 And also we have collaborators

NOTE Confidence: 0.27478766

00:35:17.035 --> 00:35:19.040 in North Carolina State,

NOTE Confidence: 0.27478766

00:35:19.040 --> 00:35:22.358 Joe Hoppin and and death of Nappy.

NOTE Confidence: 0.27478766

00:35:22.360 --> 00:35:25.564 And this as I told you is going

NOTE Confidence: 0.27478766

00:35:25.564 --> 00:35:27.074 to be an exposure model,

NOTE Confidence: 0.27478766

00:35:27.080 --> 00:35:28.848 exposure assessment model here

NOTE Confidence: 0.27478766

00:35:28.848 --> 00:35:31.500 in Long Island and we have

NOTE Confidence: 0.27478766

00:35:31.584 --> 00:35:33.680 already going through that.

NOTE Confidence: 0.27478766

00:35:33.680 --> 00:35:36.096 So the aims again is you go you

NOTE Confidence: 0.27478766

00:35:36.096 --> 00:35:38.300 collect the water you collect the

NOTE Confidence: 0.27478766

00:35:38.300 --> 00:35:40.580 blood from these people and then

NOTE Confidence: 0.27478766

00:35:40.654 --> 00:35:43.118 you're trying to also make much the

NOTE Confidence: 0.862863683666667

00:35:45.200 --> 00:35:47.192 the medical records and you're trying

NOTE Confidence: 0.862863683666667

00:35:47.192 --> 00:35:49.301 to do the exposure assessment and

NOTE Confidence: 0.862863683666667

00:35:49.301 --> 00:35:51.828 we're trying to interact all this this

NOTE Confidence: 0.862863683666667

00:35:51.828 --> 00:35:54.285 project as I told you as we're using

NOTE Confidence: 0.862863683666667

00:35:54.285 --> 00:35:56.471 metabolomics in this in this project

NOTE Confidence: 0.862863683666667

00:35:56.471 --> 00:35:59.093 and the metabolomics here will be

NOTE Confidence: 0.862863683666667

00:35:59.093 --> 00:36:01.121 coordinated with a metabolomics for

NOTE Confidence: 0.862863683666667

00:36:01.121 --> 00:36:03.816 the first program which is on the

NOTE Confidence: 0.862863683666667

00:36:03.816 --> 00:36:06.196 1st specific aim which is in mice.

NOTE Confidence: 0.862863683666667

00:36:06.200 --> 00:36:10.565 The third project is led by many

NOTE Confidence: 0.862863683666667

00:36:10.565 --> 00:36:14.700 Elimelech from the school of the the

NOTE Confidence: 0.862863683666667

00:36:14.700 --> 00:36:16.700 Department of Chemical Environmental

NOTE Confidence: 0.862863683666667

00:36:16.700 --> 00:36:20.003 Engineering and also you know is Jordan

NOTE Confidence: 0.862863683666667

00:36:20.003 --> 00:36:22.558 Petia and true Gender are from this,

NOTE Confidence: 0.862863683666667

00:36:22.560 --> 00:36:23.706 from this group.

NOTE Confidence: 0.862863683666667

00:36:23.706 --> 00:36:25.616 And again what we're they're

NOTE Confidence: 0.862863683666667

00:36:25.616 --> 00:36:28.365 trying to do is they're trying to

NOTE Confidence: 0.862863683666667

00:36:28.365 --> 00:36:30.275 develop this kind of molecules,

NOTE Confidence: 0.862863683666667

00:36:30.280 --> 00:36:33.472 the eptomers or all this idea that it

NOTE Confidence: 0.862863683666667

00:36:33.472 --> 00:36:37.014 can bind to that and then it can be

NOTE Confidence: 0.862863683666667

00:36:37.014 --> 00:36:39.680 detected and then they can transmit that.

NOTE Confidence: 0.862863683666667

00:36:39.680 --> 00:36:41.186 It's stuff we're not going to

NOTE Confidence: 0.862863683666667

00:36:41.186 --> 00:36:42.759 accomplish in the first five years,

NOTE Confidence: 0.862863683666667

00:36:42.760 --> 00:36:45.576 but at least we can develop the sensors

NOTE Confidence: 0.862863683666667

00:36:45.576 --> 00:36:48.233 to develop and then we can try to find

NOTE Confidence: 0.862863683666667

00:36:48.233 --> 00:36:50.799 out how we can develop the network.

NOTE Confidence: 0.862863683666667

00:36:50.800 --> 00:36:51.472 4th project,

NOTE Confidence: 0.862863683666667

00:36:51.472 --> 00:36:52.480 and I apologize,

NOTE Confidence: 0.862863683666667

00:36:52.480 --> 00:36:54.168 I'm trying to give to finish so we

NOTE Confidence: 0.862863683666667

00:36:54.168 --> 00:36:55.880 can have some time for discussion.

NOTE Confidence: 0.862863683666667

00:36:55.880 --> 00:36:58.344 4th project is by Jai Hong Kim

NOTE Confidence: 0.862863683666667

00:36:58.344 --> 00:36:59.400 and John Faulkner.

NOTE Confidence: 0.862863683666667

00:36:59.400 --> 00:37:02.136 And as I told you this is relating

NOTE Confidence: 0.862863683666667

00:37:02.136 --> 00:37:03.980 to develop small devices that

NOTE Confidence: 0.862863683666667

00:37:03.980 --> 00:37:06.898 you can use in your house to get

NOTE Confidence: 0.862863683666667

00:37:06.898 --> 00:37:09.252 rid of 1.4 dioxide and they're

NOTE Confidence: 0.862863683666667

00:37:09.252 --> 00:37:11.276 using the advanced oxidation.

NOTE Confidence: 0.862863683666667

00:37:11.280 --> 00:37:13.440 It will take me about a lecture to

NOTE Confidence: 0.862863683666667

00:37:13.440 --> 00:37:15.595 explain you that but essentially I think

NOTE Confidence: 0.862863683666667

00:37:15.595 --> 00:37:18.032 I told you the principle is hydrogen

NOTE Confidence: 0.862863683666667

00:37:18.032 --> 00:37:20.087 peroxide generate hydroxy radical and

NOTE Confidence: 0.862863683666667

00:37:20.087 --> 00:37:22.082 this hydroxy radical will hit that.

NOTE Confidence: 0.862863683666667

00:37:22.082 --> 00:37:23.606 They are using actually two kind

NOTE Confidence: 0.862863683666667

00:37:23.606 --> 00:37:26.008 of approaches in there and I think

NOTE Confidence: 0.862863683666667

00:37:26.008 --> 00:37:29.040 I have they they are developing

NOTE Confidence: 0.862863683666667

00:37:29.040 --> 00:37:31.880 some nice some nice things and

NOTE Confidence: 0.862863683666667

00:37:31.880 --> 00:37:34.000 I'm going to tell put there share

NOTE Confidence: 0.862863683666667

00:37:34.000 --> 00:37:35.440 some that you can that

NOTE Confidence: 0.30543107

00:37:35.440 --> 00:37:36.970 we have made.

NOTE Confidence: 0.30543107

00:37:36.970 --> 00:37:39.520 We successfully synthesized the catalyst,

NOTE Confidence: 0.30543107

00:37:39.520 --> 00:37:41.660 the boron doped carbon catalyst

NOTE Confidence: 0.30543107

00:37:41.660 --> 00:37:44.066 shown here and fabricated

NOTE Confidence: 0.30543107

00:37:44.066 --> 00:37:47.158 hydrogen peroxide synthesis cell.

NOTE Confidence: 0.30543107

00:37:47.160 --> 00:37:49.325 We quickly discover that maintaining

NOTE Confidence: 0.30543107

00:37:49.325 --> 00:37:51.901 the performance in the real water

NOTE Confidence: 0.30543107

00:37:51.901 --> 00:37:54.267 metrics would be the key for success

NOTE Confidence: 0.30543107

00:37:54.267 --> 00:37:56.511 of this research to provide a

NOTE Confidence: 0.30543107

00:37:56.511 --> 00:37:58.730 system that can perform for a long

NOTE Confidence: 0.30543107

00:37:58.799 --> 00:38:01.159 period for a household application.

NOTE Confidence: 0.30543107

00:38:01.160 --> 00:38:03.902 We therefore developed a framework on

NOTE Confidence: 0.30543107

00:38:03.902 --> 00:38:07.063 how to optimize post electrolysis to

NOTE Confidence: 0.30543107

00:38:07.063 --> 00:38:09.555 enhance catalytic tolerance against

NOTE Confidence: 0.30543107

00:38:09.555 --> 00:38:13.367 impurities present in water and in to

NOTE Confidence: 0.30543107

00:38:13.367 --> 00:38:15.839 improve overall lifetime of the cell.

NOTE Confidence: 0.30543107

00:38:15.840 --> 00:38:18.840 We discovered that optimized pulsing

NOTE Confidence: 0.30543107

00:38:18.840 --> 00:38:21.544 sequence enabled improved long term

NOTE Confidence: 0.30543107

00:38:21.544 --> 00:38:23.648 hydrogen peroxide performance to

NOTE Confidence: 0.30543107

00:38:23.648 --> 00:38:27.176 nearly 300 hours and 35 times better

NOTE Confidence: 0.30543107

00:38:27.176 --> 00:38:29.096 than conventional electrolysis even

NOTE Confidence: 0.30543107

00:38:29.096 --> 00:38:31.986 in the presence of most detrimental

NOTE Confidence: 0.30543107

00:38:31.986 --> 00:38:34.800 impurities such as nickel and zinc.

NOTE Confidence: 0.30543107

00:38:34.800 --> 00:38:37.680 These findings make this cell closer

NOTE Confidence: 0.30543107

00:38:37.680 --> 00:38:40.570 to real world implementation for

NOTE Confidence: 0.30543107

00:38:40.570 --> 00:38:43.960 prolonged hydrogen peroxide synthesis and

NOTE Confidence: 0.30543107

00:38:43.960 --> 00:38:47.799 subsequent one for dioxane destruction.

NOTE Confidence: 0.30543107

00:38:47.800 --> 00:38:49.516 Let me share some recent progress.

NOTE Confidence: 0.30543107

00:38:49.520 --> 00:38:51.016 This is the second we have made

NOTE Confidence: 0.30543107

00:38:51.016 --> 00:38:53.640 we successfully synthesized the

NOTE Confidence: 0.2659868

00:38:56.440 --> 00:38:59.000 I'm sorry it was I thought it was

NOTE Confidence: 0.2659868

00:38:59.000 --> 00:39:01.000 as an. This is the second method

NOTE Confidence: 0.2659868

00:39:01.240 --> 00:39:04.036 destroy one for dioxane in specific

NOTE Confidence: 0.2659868

00:39:04.036 --> 00:39:07.450 aim too we explore the use of

NOTE Confidence: 0.2659868

00:39:07.450 --> 00:39:09.880 engineered gas phase nano bubbles.

NOTE Confidence: 0.2659868

00:39:09.880 --> 00:39:11.904 We perform extensive characterization

NOTE Confidence: 0.2659868

00:39:11.904 --> 00:39:15.490 of nano bubbles in solution with a

NOTE Confidence: 0.2659868

00:39:15.490 --> 00:39:18.115 focus on hydro thoradical generation

NOTE Confidence: 0.2659868

00:39:18.120 --> 00:39:21.508 and by performing a number of different

NOTE Confidence: 0.2659868

00:39:21.508 --> 00:39:24.031 characterization using degradation of hydro

NOTE Confidence: 0.2659868

00:39:24.031 --> 00:39:26.035 thoradical specific target compounds,

NOTE Confidence: 0.2659868

00:39:26.040 --> 00:39:28.864 electron paramagnetic resonance spectroscopy

NOTE Confidence: 0.2659868

00:39:28.864 --> 00:39:32.394 and a fluorescence based indicator.

NOTE Confidence: 0.2659868

00:39:32.400 --> 00:39:34.782 Through this phase of research we

NOTE Confidence: 0.2659868

00:39:34.782 --> 00:39:37.826 concluded that nano bubble induced or hydro

NOTE Confidence: 0.2659868

00:39:37.826 --> 00:39:40.574 thoradical generation is minimal if not all.

NOTE Confidence: 0.2659868

00:39:40.574 --> 00:39:43.079 But we will continue to study if there

NOTE Confidence: 0.2659868

00:39:43.079 --> 00:39:45.543 is an alternative way to enhance the

NOTE Confidence: 0.2659868

00:39:45.543 --> 00:39:48.278 non local enabled advanced workstation.

NOTE Confidence: 0.329661

00:39:50.440 --> 00:39:52.120 So I alternative technology

NOTE Confidence: 0.329661

00:39:52.440 --> 00:39:54.560 I wouldn't be able to tell you that. So

NOTE Confidence: 0.329661

00:39:57.360 --> 00:39:59.278 that's why I sent my daughter my

NOTE Confidence: 0.329661

00:39:59.280 --> 00:40:00.760 daughter's first year in governmental

NOTE Confidence: 0.329661

00:40:00.760 --> 00:40:02.680 engineering in Boulder, Co.

NOTE Confidence: 0.329661

00:40:02.680 --> 00:40:05.451 So the next is our the next is

NOTE Confidence: 0.329661

00:40:05.451 --> 00:40:06.959 our community engagement core,

NOTE Confidence: 0.329661

00:40:06.960 --> 00:40:08.808 which will have Iris,

NOTE Confidence: 0.329661

00:40:08.808 --> 00:40:11.118 Kaminski and Andrea and Esposito.

NOTE Confidence: 0.329661

00:40:11.120 --> 00:40:12.508 Call it Derry Woods,

NOTE Confidence: 0.329661

00:40:12.508 --> 00:40:14.243 executive director of the Citizens

NOTE Confidence: 0.329661

00:40:14.243 --> 00:40:15.678 Campaign of the Environment.

NOTE Confidence: 0.329661

00:40:15.680 --> 00:40:18.634 And we, you know, she's very big,

NOTE Confidence: 0.329661

00:40:18.640 --> 00:40:20.720 big in terms of community

NOTE Confidence: 0.329661

00:40:20.720 --> 00:40:22.800 engagement and we're doing quite

NOTE Confidence: 0.329661

00:40:22.873 --> 00:40:25.237 a bit in in community engagement.

NOTE Confidence: 0.329661

00:40:25.240 --> 00:40:28.168 We're ready and we utilize community

NOTE Confidence: 0.329661

00:40:28.168 --> 00:40:30.120 engagement actually to recruit

NOTE Confidence: 0.329661

00:40:30.193 --> 00:40:32.158 people for the project too.

NOTE Confidence: 0.329661

00:40:32.160 --> 00:40:34.758 This has been fascinating so far,

NOTE Confidence: 0.329661

00:40:34.760 --> 00:40:37.184 but we're not staying only in

NOTE Confidence: 0.329661

00:40:37.184 --> 00:40:39.560 Log Island or even Vermont.

NOTE Confidence: 0.329661

00:40:39.560 --> 00:40:41.840 We're expanding in other areas too.

NOTE Confidence: 0.329661

00:40:41.840 --> 00:40:44.003 So the other areas that I'm working

NOTE Confidence: 0.329661

00:40:44.003 --> 00:40:46.422 right now and I will tell you is

NOTE Confidence: 0.329661

00:40:46.422 --> 00:40:48.480 the New Hampshire in North Carolina,

NOTE Confidence: 0.329661

00:40:48.480 --> 00:40:48.946 Michigan,

NOTE Confidence: 0.329661

00:40:48.946 --> 00:40:52.822 and recently I have been engaged by Florida.

NOTE Confidence: 0.329661

00:40:52.822 --> 00:40:54.878 Believe it or not,

NOTE Confidence: 0.329661

00:40:54.880 --> 00:40:56.320 there is an area over there,

NOTE Confidence: 0.329661

00:40:56.320 --> 00:40:57.296 Lake Mary,

NOTE Confidence: 0.329661

00:40:57.296 --> 00:41:01.016 that has even 30,000 times higher

NOTE Confidence: 0.329661

00:41:01.016 --> 00:41:06.000 levels of 1.4 dioxin in their surface water.

NOTE Confidence: 0.329661

00:41:06.000 --> 00:41:06.353 Anyway,

NOTE Confidence: 0.329661

00:41:06.353 --> 00:41:08.952 this is some of the stuff that

NOTE Confidence: 0.329661

00:41:08.952 --> 00:41:10.935 we've already done and the publicity

NOTE Confidence: 0.329661

00:41:10.935 --> 00:41:12.405 that the centre is getting and

NOTE Confidence: 0.329661

00:41:12.405 --> 00:41:13.638 I have more and more,

NOTE Confidence: 0.329661

00:41:13.640 --> 00:41:15.747 but I'm just leaving you that we're

NOTE Confidence: 0.329661

00:41:15.747 --> 00:41:18.319 using that as a tool and we communicate,

NOTE Confidence: 0.329661

00:41:18.320 --> 00:41:20.560 you know, people calling me in the office,

NOTE Confidence: 0.329661

00:41:20.560 --> 00:41:22.384 they said we want to register

NOTE Confidence: 0.329661

00:41:22.384 --> 00:41:23.920 for this study and you,

NOTE Confidence: 0.329661

00:41:23.920 --> 00:41:25.316 they need more information.

NOTE Confidence: 0.329661

00:41:25.316 --> 00:41:27.410 And this has not been studying

NOTE Confidence: 0.329661

00:41:27.475 --> 00:41:28.679 only in Long Island.

NOTE Confidence: 0.329661

00:41:28.680 --> 00:41:30.852 And you know, newspapers have taken

NOTE Confidence: 0.329661

00:41:30.852 --> 00:41:33.319 the centre because of the importance,

NOTE Confidence: 0.329661

00:41:33.320 --> 00:41:34.280 as I told you,

NOTE Confidence: 0.329661

00:41:34.280 --> 00:41:36.878 of 1.4 dioxin discovered in many states.

NOTE Confidence: 0.329661

00:41:36.880 --> 00:41:39.040 So we're getting a lot training component.

NOTE Confidence: 0.329661

00:41:39.040 --> 00:41:41.280 I think I was smart on that.

NOTE Confidence: 0.329661

00:41:41.280 --> 00:41:44.097 I took our Jordan,

NOTE Confidence: 0.329661

00:41:44.097 --> 00:41:46.119 I mean I took Chris Judy.

NOTE Confidence: 0.329661

00:41:46.120 --> 00:41:46.672 Chris,

NOTE Confidence: 0.329661

00:41:46.672 --> 00:41:49.490 Judy is our esteemed director of

NOTE Confidence: 0.329661

00:41:49.490 --> 00:41:51.320 a graduate program at way SPH.

NOTE Confidence: 0.329661

00:41:51.320 --> 00:41:53.198 And also we have the engineer,

NOTE Confidence: 0.329661

00:41:53.200 --> 00:41:54.247 a graduate program.

NOTE Confidence: 0.329661

00:41:54.247 --> 00:41:56.690 And this too made a dream team

NOTE Confidence: 0.329661

00:41:56.765 --> 00:41:58.914 and you know it had actually the

NOTE Confidence: 0.329661

00:41:58.914 --> 00:42:02.092 best one of the best scores on the

NOTE Confidence: 0.329661

00:42:02.092 --> 00:42:05.234 components they had almost 1012 on

NOTE Confidence: 0.329661

00:42:05.234 --> 00:42:07.856 their application and Yin Chen is

NOTE Confidence: 0.329661

00:42:07.856 --> 00:42:10.877 also part Co investigator on that.

NOTE Confidence: 0.329661

00:42:10.880 --> 00:42:13.856 So the way building up training

NOTE Confidence: 0.329661

00:42:13.856 --> 00:42:18.016 education capacity going from even

NOTE Confidence: 0.329661

00:42:18.016 --> 00:42:21.270 under graduates with an R-25 that

NOTE Confidence: 0.329661

00:42:21.270 --> 00:42:23.645 they have on training undergraduate

NOTE Confidence: 0.329661

00:42:23.645 --> 00:42:26.670 students to MPH students and also

NOTE Confidence: 0.329661

00:42:26.670 --> 00:42:29.440 PhD students and post doctoral.

NOTE Confidence: 0.329661

00:42:29.440 --> 00:42:32.880 This is classic regular the schedule

NOTE Confidence: 0.329661

00:42:32.880 --> 00:42:36.720 we're doing for the training of our PhD.

NOTE Confidence: 0.329661

00:42:36.720 --> 00:42:39.240 Last but not least and I kept the

NOTE Confidence: 0.329661

00:42:39.240 --> 00:42:41.520 picture in here of Peter Petuzzi,

NOTE Confidence: 0.329661

00:42:41.520 --> 00:42:43.180 although he retired and he

NOTE Confidence: 0.329661

00:42:43.180 --> 00:42:44.840 just stepped down right now,

NOTE Confidence: 0.329661

00:42:44.840 --> 00:42:48.368 but I love Peter and that was another

NOTE Confidence: 0.329661

00:42:48.368 --> 00:42:51.131 another dream team here of Hong Yu

NOTE Confidence: 0.329661

00:42:51.131 --> 00:42:53.153 Zhao and Peter Petuzzi that they

NOTE Confidence: 0.329661

00:42:53.153 --> 00:42:55.920 that they do the data management and

NOTE Confidence: 0.329661

00:42:55.920 --> 00:42:58.163 analysis core team which essentially

NOTE Confidence: 0.329661

00:42:58.163 --> 00:42:59.848 bring all the projects together.

NOTE Confidence: 0.329661

00:42:59.848 --> 00:43:02.677 And I'm not going to go to all specific aims,

NOTE Confidence: 0.329661

00:43:02.680 --> 00:43:04.840 but essentially it's coordination

NOTE Confidence: 0.329661

00:43:04.840 --> 00:43:07.984 between projects and cores, fostering,

NOTE Confidence: 0.329661

00:43:07.984 --> 00:43:11.920 data sharing and interoperability.

NOTE Confidence: 0.329661

00:43:11.920 --> 00:43:14.237 So we're trying to develop all this

NOTE Confidence: 0.329661

00:43:14.240 --> 00:43:17.456 cloud systems and finally and most

NOTE Confidence: 0.329661

00:43:17.456 --> 00:43:20.560 importantly is data quality assurance,

NOTE Confidence: 0.329661

00:43:20.560 --> 00:43:23.320 quality control and data integration.

NOTE Confidence: 0.55677336

00:43:23.320 --> 00:43:26.992 So this is huge and we get really good.

NOTE Confidence: 0.55677336

00:43:27.000 --> 00:43:32.716 So I am almost at my 45 minute mark and

NOTE Confidence: 0.55677336

00:43:32.716 --> 00:43:35.720 essentially what I would like to say,

NOTE Confidence: 0.55677336

00:43:35.720 --> 00:43:38.624 the establishment of our Yale Superfan

NOTE Confidence: 0.55677336

00:43:38.624 --> 00:43:41.873 Centre marks a significant milestone of

NOTE Confidence: 0.55677336

00:43:41.873 --> 00:43:44.963 our departmental commitment to addressing

NOTE Confidence: 0.55677336

00:43:44.963 --> 00:43:47.639 emerging contaminants linked to cancer.

NOTE Confidence: 0.55677336

00:43:47.640 --> 00:43:50.712 Our strategic plan includes the development

NOTE Confidence: 0.55677336

00:43:50.712 --> 00:43:52.760 of peripheral research project.

NOTE Confidence: 0.55677336

00:43:52.760 --> 00:43:55.320 We get the budget cut of almost 50%

NOTE Confidence: 0.55677336

00:43:55.320 --> 00:43:57.595 of our initial budget, not only us,

NOTE Confidence: 0.55677336

00:43:57.600 --> 00:44:00.354 everybody did because they withdrew some

NOTE Confidence: 0.55677336

00:44:00.354 --> 00:44:03.466 money from that project to support the

NOTE Confidence: 0.55677336

00:44:03.466 --> 00:44:06.273 climate change in a number of institutes.

NOTE Confidence: 0.55677336

00:44:06.280 --> 00:44:08.264 So what we're trying to do is we're

NOTE Confidence: 0.55677336

00:44:08.264 --> 00:44:10.175 trying to develop peripheral research

NOTE Confidence: 0.55677336

00:44:10.175 --> 00:44:12.435 projects for exposure assessment and

NOTE Confidence: 0.55677336

00:44:12.435 --> 00:44:14.559 various locations across United States,

NOTE Confidence: 0.55677336

00:44:14.560 --> 00:44:16.279 fostering international collaboration

NOTE Confidence: 0.55677336

00:44:16.279 --> 00:44:19.792 and broadening the impact of our work.

NOTE Confidence: 0.55677336

00:44:19.792 --> 00:44:22.480 We aim to strengthen the partnerships

NOTE Confidence: 0.55677336

00:44:22.560 --> 00:44:24.840 of course with Cancer Center,

NOTE Confidence: 0.55677336

00:44:24.840 --> 00:44:27.514 with the liver center, with diabetes Center,

NOTE Confidence: 0.55677336

00:44:27.520 --> 00:44:30.256 leveraging their expertise and

NOTE Confidence: 0.55677336

00:44:30.256 --> 00:44:32.992 resources for more comprehensive

NOTE Confidence: 0.55677336

00:44:32.992 --> 00:44:36.639 approach to our research in vendors.

NOTE Confidence: 0.55677336

00:44:36.640 --> 00:44:38.372 And as we advance,

NOTE Confidence: 0.55677336

00:44:38.372 --> 00:44:42.564 our focus will extend beyond the scope of of

NOTE Confidence: 0.55677336

00:44:42.564 --> 00:44:46.358 the 1.4 dioxin and the volatile compounds.

NOTE Confidence: 0.55677336

00:44:46.360 --> 00:44:47.344 And we try,

NOTE Confidence: 0.55677336

00:44:47.344 --> 00:44:50.308 I'm going to try to get more emerging

NOTE Confidence: 0.55677336

00:44:50.308 --> 00:44:54.316 contaminant with particular emphasis to PFAS.

NOTE Confidence: 0.55677336

00:44:54.320 --> 00:44:58.718 And actually PFAS is, you know,

NOTE Confidence: 0.55677336

00:44:58.720 --> 00:45:01.600 because of their ability

NOTE Confidence: 0.55677336

00:45:01.600 --> 00:45:04.480 to be endocrine disruptors,

NOTE Confidence: 0.55677336

00:45:04.480 --> 00:45:06.745 they have been linked now

NOTE Confidence: 0.55677336

00:45:06.745 --> 00:45:08.557 to obesity and diabetes.

NOTE Confidence: 0.55677336

00:45:08.560 --> 00:45:10.198 And as I told you before,

NOTE Confidence: 0.55677336

00:45:10.200 --> 00:45:11.395 we find something similar and

NOTE Confidence: 0.55677336

00:45:11.395 --> 00:45:13.240 there are a lot of interaction.

NOTE Confidence: 0.55677336

00:45:13.240 --> 00:45:15.364 Another thing about PFAS

NOTE Confidence: 0.55677336

00:45:15.364 --> 00:45:17.344 induces kidney cancer, OK,

NOTE Confidence: 0.55677336

00:45:17.344 --> 00:45:19.264 it's the major cancer that

NOTE Confidence: 0.55677336

00:45:19.264 --> 00:45:20.800 induces is kidney cancer.

NOTE Confidence: 0.55677336

00:45:20.800 --> 00:45:21.624 So what is the,

NOTE Confidence: 0.55677336

00:45:21.624 --> 00:45:22.036 you know,

NOTE Confidence: 0.55677336

00:45:22.040 --> 00:45:24.116 the interaction of this between them?

NOTE Confidence: 0.55677336

00:45:24.120 --> 00:45:26.320 This is something that we need to explore.

NOTE Confidence: 0.55677336

00:45:26.320 --> 00:45:29.316 So this expansion will involve in depth

NOTE Confidence: 0.55677336

00:45:29.316 --> 00:45:31.683 exploration between links and the PFAS

NOTE Confidence: 0.55677336

00:45:31.683 --> 00:45:34.035 especially as I told you kidney cancer

NOTE Confidence: 0.55677336

00:45:34.106 --> 00:45:36.502 and and and obesity bringing virus

NOTE Confidence: 0.55677336

00:45:36.502 --> 00:45:39.357 insight to the scientific community.

NOTE Confidence: 0.55677336

00:45:39.360 --> 00:45:41.248 I'm going to stop with that and I'm

NOTE Confidence: 0.55677336

00:45:41.248 --> 00:45:43.065 going to take questions and we're

NOTE Confidence: 0.55677336

00:45:43.065 --> 00:45:44.997 happy to discuss anything you wish.

NOTE Confidence: 0.317165

00:45:50.640 --> 00:45:53.360 Yes, great. Thank you.

NOTE Confidence: 0.317165

00:45:53.360 --> 00:45:57.640 I the whole project began

NOTE Confidence: 0.317165

00:45:57.640 --> 00:45:59.615 with the involvement of the

NOTE Confidence: 0.317165

00:45:59.615 --> 00:46:02.240 community alerting you to 1 dioxide.

NOTE Confidence: 0.317165

00:46:02.240 --> 00:46:04.680 So at the Cancer Center,

NOTE Confidence: 0.317165

00:46:04.680 --> 00:46:06.240 liver cancer is a priority.

NOTE Confidence: 0.317165

00:46:06.240 --> 00:46:08.724 Cancer that is in the strategic

NOTE Confidence: 0.317165

00:46:08.724 --> 00:46:11.366 plan given its increased rates in

NOTE Confidence: 0.317165

00:46:11.366 --> 00:46:13.636 Connecticut as well as nationally.

NOTE Confidence: 0.317165

00:46:13.640 --> 00:46:15.866 So I'd love to think about

NOTE Confidence: 0.317165

00:46:15.866 --> 00:46:17.825 collaborations to how we can

NOTE Confidence: 0.317165

00:46:17.825 --> 00:46:20.225 do more on the epidemiologic or

NOTE Confidence: 0.317165

00:46:20.225 --> 00:46:22.346 clinical aspect and and link it,

NOTE Confidence: 0.317165

00:46:22.346 --> 00:46:24.106 you know with patients coming in

NOTE Confidence: 0.317165

00:46:24.106 --> 00:46:25.752 newly diagnosed with liver cancer.

NOTE Confidence: 0.317165

00:46:25.752 --> 00:46:28.302 Could there be a case control study

NOTE Confidence: 0.317165

00:46:28.302 --> 00:46:30.714 where water is collected from their

NOTE Confidence: 0.317165

00:46:30.714 --> 00:46:32.184 home blood questionnaires and

NOTE Confidence: 0.317165

00:46:32.184 --> 00:46:33.592 then have a a controlled sample.

NOTE Confidence: 0.317165

00:46:33.592 --> 00:46:35.680 So there's so much opportunity.

NOTE Confidence: 0.317165

00:46:35.680 --> 00:46:36.118 I think here

NOTE Confidence: 0.3535362

00:46:36.640 --> 00:46:38.536 that's what David said. That's why

NOTE Confidence: 0.3535362

00:46:38.536 --> 00:46:41.039 he invited me to give the talk here.

NOTE Confidence: 0.3535362

00:46:41.040 --> 00:46:42.240 We need to get this, Melinda,

NOTE Confidence: 0.3535362

00:46:42.240 --> 00:46:44.160 this is a very good point.

NOTE Confidence: 0.3535362

00:46:44.160 --> 00:46:46.536 If we can get more and actually, you know,

NOTE Confidence: 0.3535362

00:46:46.536 --> 00:46:48.264 we can explore the possibilities and

NOTE Confidence: 0.3535362

00:46:48.264 --> 00:46:50.679 if we have more blood samples of that,

NOTE Confidence: 0.3535362

00:46:50.680 --> 00:46:53.625 we can do much better, much, much more.

NOTE Confidence: 0.3535362

00:46:53.625 --> 00:46:56.680 And that's a very good point. Yes.

NOTE Confidence: 0.71345735

00:46:57.680 --> 00:46:59.240 Going to Long Island for Thanksgiving,

NOTE Confidence: 0.71345735

00:47:00.760 --> 00:47:01.920 get your water with you. Is

NOTE Confidence: 0.71345735

00:47:03.920 --> 00:47:05.720 there a safe like what do you recommend?

NOTE Confidence: 0.45874107

00:47:06.680 --> 00:47:08.912 What is there a brand of like bottled

NOTE Confidence: 0.45874107

00:47:08.912 --> 00:47:11.159 water that doesn't that's guaranteed to

NOTE Confidence: 0.45874107

00:47:11.240 --> 00:47:13.440 not be contaminated? Depends.

NOTE Confidence: 0.45874107

00:47:13.440 --> 00:47:14.850 Now listen, I mean there are

NOTE Confidence: 0.45874107

00:47:14.850 --> 00:47:16.440 there are areas in Long Island,

NOTE Confidence: 0.45874107

00:47:16.440 --> 00:47:18.856 there is this interactive map that you can

NOTE Confidence: 0.45874107

00:47:18.856 --> 00:47:21.117 find which areas they have high levels.

NOTE Confidence: 0.45874107

00:47:21.120 --> 00:47:24.368 But to be on the safe side, you know,

NOTE Confidence: 0.45874107

00:47:24.368 --> 00:47:27.120 I was going to say use public water,

NOTE Confidence: 0.45874107

00:47:27.120 --> 00:47:28.800 but this public water over

NOTE Confidence: 0.45874107

00:47:28.800 --> 00:47:30.480 there comes from well water.

NOTE Confidence: 0.45874107

00:47:30.480 --> 00:47:32.800 I don't know how the late status is,

NOTE Confidence: 0.45874107

00:47:32.800 --> 00:47:34.232 but it might not be a bad idea

NOTE Confidence: 0.45874107

00:47:34.232 --> 00:47:35.558 to use some bottled water.

NOTE Confidence: 0.25716716

00:47:39.160 --> 00:47:41.230 First of all, I want to echo on you

NOTE Confidence: 0.25716716

00:47:41.230 --> 00:47:43.526 and Melinda set because there are

NOTE Confidence: 0.25716716

00:47:43.526 --> 00:47:45.130 tremendous opportunities here that

NOTE Confidence: 0.25716716

00:47:45.130 --> 00:47:48.280 are aligned in many ways with the

NOTE Confidence: 0.25716716

00:47:48.280 --> 00:47:50.728 forthcoming Cancer Center strategic plan.

NOTE Confidence: 0.25716716

00:47:50.728 --> 00:47:54.368 I'd like to add to that education because

NOTE Confidence: 0.25716716

00:47:54.368 --> 00:47:57.512 you have cancer education programs running

NOTE Confidence: 0.25716716

00:47:57.512 --> 00:48:00.255 that are cancer connected education

NOTE Confidence: 0.25716716

00:48:00.255 --> 00:48:02.953 programs running that are complementary

NOTE Confidence: 0.25716716

00:48:02.953 --> 00:48:05.118 to our other training programs.

NOTE Confidence: 0.25716716

00:48:05.120 --> 00:48:08.684 The question for you though is you began with

NOTE Confidence: 0.25716716

00:48:08.684 --> 00:48:11.355 a a challenge from the state of Connecticut,

NOTE Confidence: 0.25716716

00:48:11.360 --> 00:48:12.440 but I noticed all the

NOTE Confidence: 0.25716716

00:48:12.440 --> 00:48:13.800 collaborations are out of state.

NOTE Confidence: 0.25716716

00:48:13.800 --> 00:48:16.048 Can you tell us more about how

NOTE Confidence: 0.25716716

00:48:16.048 --> 00:48:19.080 this work might impact our state

NOTE Confidence: 0.25716716

00:48:19.080 --> 00:48:22.536 and our catchment community?

NOTE Confidence: 0.25716716

00:48:22.536 --> 00:48:26.240 It's the same thing.

NOTE Confidence: 0.25716716

00:48:26.240 --> 00:48:26.640 There are

NOTE Confidence: 0.30014098

00:48:26.640 --> 00:48:29.070 certain areas that they have 1.4

NOTE Confidence: 0.30014098

00:48:29.070 --> 00:48:31.920 dioxane in the state of Connecticut.

NOTE Confidence: 0.30014098

00:48:31.920 --> 00:48:34.368 However, the state of Connecticut has

NOTE Confidence: 0.30014098

00:48:34.368 --> 00:48:37.539 taken very good care of the public water

NOTE Confidence: 0.30014098

00:48:37.539 --> 00:48:40.160 and their public water is pretty safe.

NOTE Confidence: 0.30014098

00:48:40.160 --> 00:48:43.120 You are as long as you are in public water,

NOTE Confidence: 0.30014098

00:48:43.120 --> 00:48:44.518 they're taking good care how it's

NOTE Confidence: 0.30014098

00:48:44.518 --> 00:48:46.119 going to have a major impact.

NOTE Confidence: 0.30014098

00:48:46.120 --> 00:48:47.770 It's going to have a major

NOTE Confidence: 0.30014098

00:48:47.770 --> 00:48:49.760 impact on on liver cancer.

NOTE Confidence: 0.30014098

00:48:49.760 --> 00:48:52.160 But you know the problem,

NOTE Confidence: 0.30014098

00:48:52.160 --> 00:48:54.278 it might not be completely here,

NOTE Confidence: 0.30014098

00:48:54.280 --> 00:48:59.624 but it has several aspects of you know,

NOTE Confidence: 0.30014098

00:48:59.624 --> 00:49:01.040 getting engaged with

NOTE Confidence: 0.51385456

00:49:04.320 --> 00:49:06.678 agencies, the state agencies addressing that.

NOTE Confidence: 0.51385456

00:49:06.680 --> 00:49:08.717 And as Melita said, there is an

NOTE Confidence: 0.51385456

00:49:08.717 --> 00:49:10.598 increased rate of of liver cancer,

NOTE Confidence: 0.51385456

00:49:10.600 --> 00:49:12.175 which brings the other point

NOTE Confidence: 0.51385456

00:49:12.175 --> 00:49:13.435 you were talking about.

NOTE Confidence: 0.51385456

00:49:13.440 --> 00:49:16.933 I also have AT32 program with the

NOTE Confidence: 0.51385456

00:49:16.933 --> 00:49:19.600 livers with psychiatry essentially.

NOTE Confidence: 0.51385456

00:49:19.600 --> 00:49:22.642 But it's my point of view is my other

NOTE Confidence: 0.51385456

00:49:22.642 --> 00:49:26.279 lab that I have is alcohol and cancer and

NOTE Confidence: 0.51385456

00:49:26.279 --> 00:49:28.674 I actually organized the International

NOTE Confidence: 0.51385456

00:49:28.674 --> 00:49:31.160 Conference on Alcohol and Cancer.

NOTE Confidence: 0.51385456

00:49:31.160 --> 00:49:33.688 So this is another area that I think

NOTE Confidence: 0.51385456

00:49:33.688 --> 00:49:35.402 the increased levels of alcohol

NOTE Confidence: 0.51385456

00:49:35.402 --> 00:49:38.054 consumption is a very good contributor

NOTE Confidence: 0.51385456

00:49:38.054 --> 00:49:40.399 and that along with obesity.

NOTE Confidence: 0.51385456

00:49:40.400 --> 00:49:43.288 So if you add another factor which is

NOTE Confidence: 0.51385456

00:49:43.288 --> 00:49:46.035 1.4 dioxin even if it's in low levels

NOTE Confidence: 0.51385456

00:49:46.040 --> 00:49:48.640 for for example in the state of Connecticut,

NOTE Confidence: 0.51385456

00:49:48.640 --> 00:49:51.128 what we saw in here there is an

NOTE Confidence: 0.51385456

00:49:51.128 --> 00:49:53.816 increase of the Cytochrome P CN¥452.00.

NOTE Confidence: 0.51385456

00:49:53.816 --> 00:49:57.720 So if you get get that in combination

NOTE Confidence: 0.51385456

00:49:57.827 --> 00:50:00.620 with smoking nitrozamines or other

NOTE Confidence: 0.51385456

00:50:00.620 --> 00:50:03.860 exposures you can increase the rate

NOTE Confidence: 0.51385456

00:50:03.860 --> 00:50:07.000 of you know of of cancer in the area,

NOTE Confidence: 0.6351126

00:50:09.600 --> 00:50:10.480 right. Yes,

NOTE Confidence: 0.6351126

00:50:15.360 --> 00:50:18.496 well that's a good point.

NOTE Confidence: 0.6351126

00:50:18.496 --> 00:50:22.733 Listen, we have done a lot of risk evaluation

NOTE Confidence: 0.6351126

00:50:22.733 --> 00:50:27.317 risk for water sources in on wells water.

NOTE Confidence: 0.6351126

00:50:27.320 --> 00:50:29.511 I wouldn't say that 1.4 dioxin is

NOTE Confidence: 0.6351126

00:50:29.511 --> 00:50:31.354 that major concern because we know

NOTE Confidence: 0.6351126

00:50:31.354 --> 00:50:35.200 what the were the areas of 1.4 dioxin.

NOTE Confidence: 0.6351126

00:50:35.200 --> 00:50:38.755 My concern would have been more on the PFAS.

NOTE Confidence: 0.6351126

00:50:38.760 --> 00:50:41.200 So my recommendation is test

NOTE Confidence: 0.6351126

00:50:41.200 --> 00:50:43.640 your well water for PFAS,

NOTE Confidence: 0.6351126

00:50:43.640 --> 00:50:46.767 that's the only suggestion.

NOTE Confidence: 0.6351126

00:50:46.767 --> 00:50:48.969 I don't think in Connecticut we

NOTE Confidence: 0.6351126

00:50:48.969 --> 00:50:51.600 have that major issue of 1.4 dioxin.

NOTE Confidence: 0.29898286

00:50:59.040 --> 00:51:01.272 Well, if you test, that's a very good point.

NOTE Confidence: 0.29898286

00:51:01.280 --> 00:51:03.530 If you test it, if you test your well

NOTE Confidence: 0.29898286

00:51:03.530 --> 00:51:05.840 and it's positive for 1.4 dioxin,

NOTE Confidence: 0.29898286

00:51:05.840 --> 00:51:09.171 you don't have to wait for for

NOTE Confidence: 0.29898286

00:51:09.171 --> 00:51:11.877 Jihong Kim to develop these devices.

NOTE Confidence: 0.29898286

00:51:11.880 --> 00:51:13.800 What you do is you use plastic water,

NOTE Confidence: 0.29898286

00:51:13.800 --> 00:51:16.280 I mean plastic water from,

NOTE Confidence: 0.29898286

00:51:16.280 --> 00:51:17.384 you know, from bottles.

NOTE Confidence: 0.29898286

00:51:17.384 --> 00:51:19.428 Of course you can have some things

NOTE Confidence: 0.29898286

00:51:19.428 --> 00:51:21.680 from there, but it's at least safer.

NOTE Confidence: 0.29898286

00:51:21.680 --> 00:51:24.160 If you find that there is P fast,

NOTE Confidence: 0.29898286

00:51:24.160 --> 00:51:26.176 the P fast, you can filter them

NOTE Confidence: 0.29898286

00:51:26.176 --> 00:51:28.038 with charcoal and stuff like that.

NOTE Confidence: 0.29898286

00:51:28.040 --> 00:51:30.490 So there are devices that

NOTE Confidence: 0.29898286

00:51:30.490 --> 00:51:31.960 they're relatively cheap.

NOTE Confidence: 0.29898286

00:51:31.960 --> 00:51:34.100 But one of the things that I want to tell

NOTE Confidence: 0.29898286

00:51:34.152 --> 00:51:36.238 you is the importance of drinking water.

NOTE Confidence: 0.29898286

00:51:36.240 --> 00:51:37.680 Because you're going to drink,

NOTE Confidence: 0.29898286

00:51:37.680 --> 00:51:39.520 you may avoid drinking alcohol,

NOTE Confidence: 0.29898286

00:51:39.520 --> 00:51:42.640 you may avoid smoking cigarettes,

NOTE Confidence: 0.29898286

00:51:42.640 --> 00:51:43.879 but you're going to drink your water.

NOTE Confidence: 0.29898286

00:51:43.880 --> 00:51:44.280 Yes,

NOTE Confidence: 0.45110154

00:51:47.520 --> 00:51:48.320 you're safe,

NOTE Confidence: 0.45110154

00:51:51.080 --> 00:51:51.880 you're safe,

NOTE Confidence: 0.45110154

00:51:55.080 --> 00:51:56.280 You cover both of them.

NOTE Confidence: 0.7347072

00:51:58.920 --> 00:52:00.770 Well, the other thing is

NOTE Confidence: 0.7347072

00:52:00.770 --> 00:52:03.040 you know in terms of the,

NOTE Confidence: 0.7347072

00:52:03.040 --> 00:52:05.536 the Cancer Center is the liver

NOTE Confidence: 0.7347072

00:52:05.536 --> 00:52:08.666 center and also there is a high

NOTE Confidence: 0.7347072

00:52:08.666 --> 00:52:10.976 incidence of alcohol induced liver

NOTE Confidence: 0.7347072

00:52:10.976 --> 00:52:13.140 cancers and not only the liver

NOTE Confidence: 0.7347072

00:52:13.140 --> 00:52:14.840 cancer but also colorectal cancers.

NOTE Confidence: 0.7347072

00:52:14.840 --> 00:52:17.114 And the incidence of colorectal cancers

NOTE Confidence: 0.7347072

00:52:17.114 --> 00:52:19.448 are really high as well throughout

NOTE Confidence: 0.7347072

00:52:19.448 --> 00:52:22.000 not only the nation internationally

NOTE Confidence: 0.7347072

00:52:22.000 --> 00:52:25.000 and especially the early onsets.

NOTE Confidence: 0.354462

00:52:31.880 --> 00:52:32.400 Yes,

NOTE Confidence: 0.354462

00:52:34.440 --> 00:52:37.448 I think so. Yes.

NOTE Confidence: 0.354462

00:52:37.448 --> 00:52:39.320 So thank you for the question.

NOTE Confidence: 0.354462

00:52:39.320 --> 00:52:41.480 Usually the stages are, you know,

NOTE Confidence: 0.354462

00:52:41.480 --> 00:52:42.800 you start from steatosis,

NOTE Confidence: 0.354462

00:52:42.800 --> 00:52:44.120 you go to fibrosis,

NOTE Confidence: 0.354462

00:52:44.120 --> 00:52:46.316 you go to cirrhosis and then

NOTE Confidence: 0.354462

00:52:46.316 --> 00:52:49.067 some cases you know you go to

NOTE Confidence: 0.354462

00:52:49.067 --> 00:52:50.679 a pater cellular carcinoma.

NOTE Confidence: 0.354462

00:52:50.680 --> 00:52:52.702 It is possible that you can

NOTE Confidence: 0.354462

00:52:52.702 --> 00:52:53.713 go without cirrhosis.

NOTE Confidence: 0.354462

00:52:53.720 --> 00:52:57.545 Yes, I mean in animal models

NOTE Confidence: 0.354462

00:52:57.545 --> 00:52:59.170 they go without any any

NOTE Confidence: 0.354462

00:52:59.241 --> 00:53:01.036 signs of cirrhosis at all.

NOTE Confidence: 0.5598697

00:53:05.600 --> 00:53:07.049 But one of the problems, well,

NOTE Confidence: 0.5598697

00:53:07.049 --> 00:53:08.294 talking about the animals and

NOTE Confidence: 0.5598697

00:53:08.294 --> 00:53:09.560 humans and stuff like that,

NOTE Confidence: 0.5598697

00:53:09.560 --> 00:53:11.840 you know that alcohol,

NOTE Confidence: 0.5598697

00:53:11.840 --> 00:53:14.720 it is well known that causes

NOTE Confidence: 0.5598697

00:53:14.720 --> 00:53:16.028 liver cirrhosis, right?

NOTE Confidence: 0.5598697

00:53:16.028 --> 00:53:19.680 If you try to do the same thing in mice,

NOTE Confidence: 0.5598697

00:53:19.680 --> 00:53:21.320 there is no way you can do it.

NOTE Confidence: 0.5598697

00:53:21.320 --> 00:53:23.768 But you can take a mouse and you can

NOTE Confidence: 0.5598697

00:53:23.768 --> 00:53:26.558 put carbon to trichlorate for 3-4 weeks,

NOTE Confidence: 0.5598697

00:53:26.560 --> 00:53:28.760 you'll get cirrhosis 100%.

NOTE Confidence: 0.5598697

00:53:28.760 --> 00:53:31.680 So that's that's the the challenges

NOTE Confidence: 0.5598697

00:53:31.680 --> 00:53:33.840 that you have between animal models

NOTE Confidence: 0.5598697

00:53:33.840 --> 00:53:36.150 and human thing and that's what we're

NOTE Confidence: 0.5598697

00:53:36.150 --> 00:53:38.702 trying to to do the organoids as a

NOTE Confidence: 0.5598697

00:53:38.702 --> 00:53:40.960 complementary to to the mouse studies.

NOTE Confidence: 0.33334184

00:53:45.880 --> 00:53:47.998 All right. Thank you very much.