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

 $00{:}00{:}03.731 \dashrightarrow 00{:}00{:}06.269$ Public Health with Vasilis and also

NOTE Confidence: 0.6866663

 $00{:}00{:}06{.}269 \dashrightarrow 00{:}00{:}09{.}040$ 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

 $00:00:11.720 \longrightarrow 00:00:14.400$ which focuses on lifestyle,

NOTE Confidence: 0.6866663

 $00{:}00{:}14.400 \dashrightarrow 00{:}00{:}17.360$ genetic and environmental risk factors

NOTE Confidence: 0.6866663

 $00:00:17.360 \rightarrow 00:00:20.320$ for cancer etiology and outcomes.

NOTE Confidence: 0.6866663

 $00{:}00{:}20{.}320 \dashrightarrow 00{:}00{:}22{.}828$ So we're delighted today to have

NOTE Confidence: 0.68666663

 $00{:}00{:}22.828 \dashrightarrow 00{:}00{:}25.260$ the Yale and National International

NOTE Confidence: 0.6866663

 $00:00:25.260 \rightarrow 00:00:27.992$ expert in environmental carcinogens

NOTE Confidence: 0.6866663

 $00{:}00{:}27{.}992 \dashrightarrow 00{:}00{:}30{.}208$ and cancer speak to us.

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

00:00:31.360 --> 00:00:33.670 who is also he's the Susan Dwight NOTE Confidence: 0.6866663 $00{:}00{:}33.670 \dashrightarrow 00{:}00{:}35.129$ Bliss Professor of Environmental NOTE Confidence: 0.6866663 $00{:}00{:}35{.}129 \dashrightarrow 00{:}00{:}37{.}971$ 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 $00:00:48.188 \longrightarrow 00:00:50.708$ of Ion Ionina in Greece. NOTE Confidence: 0.6866663 $00{:}00{:}50{.}708 \dashrightarrow 00{:}00{:}53{.}488$ 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 $00:00:58.241 \rightarrow 00:01:00.246$ at the Department of Environmental NOTE Confidence: 0.6866663 $00:01:00.246 \rightarrow 00:01:02.632$ 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: 0.68666663
- 00:01:09.368 --> 00:01:11.953 of Colorado School of Pharmacy,

 $00{:}01{:}11{.}960 \dashrightarrow 00{:}01{:}14{.}158$ 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

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 $00:01:18.476 \dashrightarrow 00:01:20.440$ professor also of ophthalmology.

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 $00:01:20.440 \rightarrow 00:01:22.916$ He's established an internationally

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 $00{:}01{:}22.916 \dashrightarrow 00{:}01{:}26.011$ recognized research program that's been

NOTE Confidence: 0.6866663

 $00:01:26.011 \rightarrow 00:01:28.459$ continuously funded by NIH since 1997,

NOTE Confidence: 0.68666663

 $00{:}01{:}28.459 \dashrightarrow 00{:}01{:}30.554$ and his research interests include

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 $00{:}01{:}30{.}554 \dashrightarrow 00{:}01{:}32{.}754$ the etiology and molecular mechanisms

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 $00:01:32.754 \rightarrow 00:01:34.602$ of environmentally induced human

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 $00{:}01{:}34{.}602 \dashrightarrow 00{:}01{:}36{.}912$ disease such as liver disease,

NOTE Confidence: 0.6866663

 $00{:}01{:}36{.}920 \dashrightarrow 00{:}01{:}40{.}232$ obesity and diabetes, cancer,

NOTE Confidence: 0.6866663

 $00{:}01{:}40{.}232 \dashrightarrow 00{:}01{:}42{.}716$ and neurodegenerative diseases.

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 $00:01:42.720 \dashrightarrow 00:01:45.560$ Vasilis is the director of the N i.e.

- $00:01:45.560 \longrightarrow 00:01:47.552$ HS funded P 42,
- NOTE Confidence: 0.6866663
- 00:01:47.552 --> 00:01:49.544 Yale Superfund Research Center
- NOTE Confidence: 0.6866663
- $00{:}01{:}49{.}544 \dashrightarrow 00{:}01{:}52{.}802$ 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
- $00{:}01{:}55{.}454 \dashrightarrow 00{:}01{:}58{.}157$ Mouse Models and Metabolomics tools
- NOTE Confidence: 0.6866663
- $00{:}01{:}58{.}157 \dashrightarrow 00{:}02{:}00{.}741$ to investigate alcohol metabolism
- NOTE Confidence: 0.6866663
- $00:02:00.741 \longrightarrow 00:02:02.679$ and tissue injury.
- NOTE Confidence: 0.6866663
- $00:02:02.680 \longrightarrow 00:02:04.945$ This is really does translational
- NOTE Confidence: 0.6866663
- $00{:}02{:}04{.}945 \dashrightarrow 00{:}02{:}06{.}757$ 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
- $00:02:09.367 \rightarrow 00:02:11.451$ research focusing on environmental
- NOTE Confidence: 0.6866663
- 00:02:11.451 --> 00:02:13.239 risk factors in cancer.
- NOTE Confidence: 0.6866663
- $00:02:13.240 \longrightarrow 00:02:13.586$ 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
- $00:02:16.772 \longrightarrow 00:02:18.237$ Thank you for the invitation.

- NOTE Confidence: 0.3946306
- 00:02:18.240 --> 00:02:19.950 And Melinda, thank you very much

 $00:02:19.950 \longrightarrow 00:02:21.470$ 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

 $00{:}02{:}26.280 \dashrightarrow 00{:}02{:}28.560$ anyway, so I wish.

NOTE Confidence: 0.45481142

 $00{:}02{:}31{.}920 \dashrightarrow 00{:}02{:}33{.}168$ Let me start.

NOTE Confidence: 0.45481142

 $00{:}02{:}33.168 \dashrightarrow 00{:}02{:}35.664$ Actually the talk of today's lecture

NOTE Confidence: 0.45481142

 $00:02:35.664 \rightarrow 00:02:38.600$ is exploring environmental health,

NOTE Confidence: 0.45481142

 $00:02:38.600 \longrightarrow 00:02:42.665$ the insights through our P42

NOTE Confidence: 0.45481142

 $00:02:42.665 \rightarrow 00:02:46.092$ 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

 $00:02:48.344 \longrightarrow 00:02:52.080$ their effects on cancer.

NOTE Confidence: 0.45481142

 $00{:}02{:}52{.}080 \dashrightarrow 00{:}02{:}54{.}960$ So one of the concerns that we have is,

NOTE Confidence: 0.45481142

 $00{:}02{:}54{.}960 \dashrightarrow 00{:}02{:}58{.}800$ you know that 50% or may be more than

NOTE Confidence: 0.7186378

 $00{:}03{:}01{.}320 \dashrightarrow 00{:}03{:}03{.}994$ more than 50% of the cancers might

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 $00{:}03{:}03{.}994 \dashrightarrow 00{:}03{:}06{.}400$ not be due to the genetic effects,

 $00:03:06.400 \longrightarrow 00:03:07.920$ might not be to mutations,

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 $00:03:07.920 \dashrightarrow 00:03:09.540$ might not be to polymorphisms

NOTE Confidence: 0.7186378

 $00{:}03{:}09{.}540 \dashrightarrow 00{:}03{:}10{.}836$ or things like that.

NOTE Confidence: 0.7186378

 $00:03:10.840 \dashrightarrow 00:03:13.400$ So they have an environmental impact.

NOTE Confidence: 0.7186378

 $00:03:13.400 \dashrightarrow 00:03:16.200$ 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

 $00:03:23.760 \longrightarrow 00:03:27.426$ which actually there was a very

NOTE Confidence: 0.7186378

 $00{:}03{:}27{.}426 \dashrightarrow 00{:}03{:}30{.}380$ 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

 $00{:}03{:}32.720 \dashrightarrow 00{:}03{:}35.752$ which posed the question if the early onset

NOTE Confidence: 0.7186378

 $00:03:35.752 \rightarrow 00:03:38.798$ of cancer is an emerging global epidemic.

NOTE Confidence: 0.7186378

 $00{:}03{:}38{.}800 \dashrightarrow 00{:}03{:}39{.}844$ And it has.

NOTE Confidence: 0.7186378

 $00:03:39.844 \rightarrow 00:03:43.320$ As you can see, the incidence of of

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 $00:03:43.320 \rightarrow 00:03:46.768$ cancers in various organs in ages less

NOTE Confidence: 0.7186378

 $00:03:46.768 \rightarrow 00:03:49.960$ than 50 and actually less than 40,

- NOTE Confidence: 0.7186378
- $00{:}03{:}49{.}960 \dashrightarrow 00{:}03{:}51{.}976$ has been rising in many parts

 $00:03:51.976 \longrightarrow 00:03:53.959$ of the world since the 80s.

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 $00{:}03{:}53{.}960 \dashrightarrow 00{:}03{:}56{.}810$ The evidence suggests an ideological risk

NOTE Confidence: 0.7186378

 $00:03:56.810 \rightarrow 00:03:59.799$ of risk factor exposures in early life.

NOTE Confidence: 0.7186378

 $00{:}03{:}59{.}800 \dashrightarrow 00{:}04{:}01{.}240$ Young, under hood,

NOTE Confidence: 0.7186378

 $00:04:01.240 \longrightarrow 00:04:03.640$ and all those specific individual

NOTE Confidence: 0.7186378

 $00:04:03.640 \dashrightarrow 00:04:06.198$ exposures remain to be largely unknown.

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 $00:04:06.200 \rightarrow 00:04:09.077$ So this is what my interests are,

NOTE Confidence: 0.7186378

 $00:04:09.080 \dashrightarrow 00:04:11.016$ how this environmental exposures

NOTE Confidence: 0.7186378

 $00:04:11.016 \longrightarrow 00:04:14.120$ could lead not only to cancers but

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 $00:04:14.120 \longrightarrow 00:04:16.160$ also to early onsets of cancers.

NOTE Confidence: 0.7186378

 $00:04:16.160 \longrightarrow 00:04:19.121$ 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

 $00:04:20.800 \longrightarrow 00:04:21.838$ associations to alcohol,

NOTE Confidence: 0.7186378

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

- $00:04:23.568 \longrightarrow 00:04:24.760$ another lecture on that.
- NOTE Confidence: 0.7186378
- 00:04:24.760 --> 00:04:25.382 But anyway,

 $00:04:25.382 \longrightarrow 00:04:26.937$ the early onset cancer epidemic

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 $00:04:26.937 \longrightarrow 00:04:28.669$ might be 1 manifestation of

NOTE Confidence: 0.7186378

 $00{:}04{:}28.669 \dashrightarrow 00{:}04{:}31.252$ 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

 $00{:}04{:}33{.}038 \dashrightarrow 00{:}04{:}35{.}078$ in the young and future generation.

NOTE Confidence: 0.7186378

 $00{:}04{:}35{.}080 \dashrightarrow 00{:}04{:}38{.}600$ 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

 $00{:}04{:}40{.}280 \dashrightarrow 00{:}04{:}44{.}040$ it's the exposures of the of the mother.

NOTE Confidence: 0.7186378

 $00{:}04{:}44{.}040 \dashrightarrow 00{:}04{:}46{.}998$ And actually now it's also exposure

NOTE Confidence: 0.7186378

 $00{:}04{:}46{.}998 \dashrightarrow 00{:}04{:}48{.}970$ preconceptionally for both mother

NOTE Confidence: 0.7186378

 $00{:}04{:}49{.}045 \dashrightarrow 00{:}04{:}50{.}792$ and father what they have been

NOTE Confidence: 0.7186378

 $00{:}04{:}50.792 \dashrightarrow 00{:}04{:}52.815$ into it and how this would affect

NOTE Confidence: 0.7186378

 $00{:}04{:}52.815 \dashrightarrow 00{:}04{:}54.600$ the development of the embryon,

NOTE Confidence: 0.7186378

 $00{:}04{:}54{.}600 \dashrightarrow 00{:}04{:}55{.}560$ the later studies.

- NOTE Confidence: 0.7186378
- $00:04:55.560 \longrightarrow 00:04:57.772$ So the exposure includes

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

NOTE Confidence: 0.7186378

 $00:04:58.880 \longrightarrow 00:05:00.544$ Melinda talked about diet,

NOTE Confidence: 0.7186378

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

NOTE Confidence: 0.7186378

 $00:05:00.960 \rightarrow 00:05:03.990$ obesity and microbiome and this

NOTE Confidence: 0.7186378

 $00:05:03.990 \dashrightarrow 00:05:07.020$ this exposome has changed completely

NOTE Confidence: 0.7186378

 $00:05:07.112 \longrightarrow 00:05:09.520$ in the last 40 or 50 years.

NOTE Confidence: 0.7186378

 $00:05:09.520 \longrightarrow 00:05:13.260$ So a lot of people looking into how this

NOTE Confidence: 0.7186378

 $00:05:13.260 \dashrightarrow 00:05:15.840$ Eddy life exposures could have an effect.

NOTE Confidence: 0.7186378

 $00{:}05{:}15{.}840 \dashrightarrow 00{:}05{:}18{.}416$ Of course we should not ignore the

NOTE Confidence: 0.7186378

 $00:05:18.416 \longrightarrow 00:05:20.987$ exposure we have on daily basis and

NOTE Confidence: 0.7186378

 $00{:}05{:}20{.}987 \dashrightarrow 00{:}05{:}23{.}610$ talking about that one of the most

NOTE Confidence: 0.7186378

 $00{:}05{:}23.610 \dashrightarrow 00{:}05{:}25.955$ important thing is drinking water.

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 $00{:}05{:}25{.}960 \dashrightarrow 00{:}05{:}27{.}871$ 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

 $00:05:30.060 \rightarrow 00:05:31.796$ 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

 $00:05:34.054 \longrightarrow 00:05:35.720$ what the water contains.

NOTE Confidence: 0.7186378

 $00:05:35.720 \longrightarrow 00:05:39.073$ So it's it's a lot of aspects in here.

NOTE Confidence: 0.7186378

 $00{:}05{:}39{.}073 \dashrightarrow 00{:}05{:}41{.}528$ So talking about drinking water

NOTE Confidence: 0.7186378

 $00{:}05{:}41{.}528 \dashrightarrow 00{:}05{:}43{.}840$ and protecting the environment.

NOTE Confidence: 0.7186378

 $00{:}05{:}43{.}840 \dashrightarrow 00{:}05{:}46{.}216$ So the federal government has the

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 $00:05:46.216 \dashrightarrow 00:05:49.395$ Superfund Act and what that is refers

NOTE Confidence: 0.7186378

 $00{:}05{:}49{.}395 \dashrightarrow 00{:}05{:}51{.}920$ to a comprehensive environmental response.

NOTE Confidence: 0.7186378

 $00{:}05{:}51{.}920 \dashrightarrow 00{:}05{:}53{.}712$ Compensation and liability are

NOTE Confidence: 0.7186378

 $00{:}05{:}53.712 \dashrightarrow 00{:}05{:}56.400$ known as CLEFCLA since the 80s.

NOTE Confidence: 0.7186378

 $00{:}05{:}56{.}400 \dashrightarrow 00{:}05{:}58{.}656$ So what the federal government did

NOTE Confidence: 0.7186378

 $00:05:58.656 \rightarrow 00:06:01.575$ 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

 $00{:}06{:}04.207 \dashrightarrow 00{:}06{:}06.759$ contaminate and hazardous substances.

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 $00:06:06.760 \rightarrow 00:06:07.148$ Especially,

- NOTE Confidence: 0.7186378
- $00{:}06{:}07{.}148 \dashrightarrow 00{:}06{:}09{.}476$ you know there are some states,

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

 $00:06:15.640 \rightarrow 00:06:19.510$ it's a retired state of heavily

NOTE Confidence: 0.7186378

 $00:06:19.510 \longrightarrow 00:06:20.680$ industrialized area.

NOTE Confidence: 0.7186378

 $00:06:20.680 \dashrightarrow 00:06:25.695$ If I'll show you the sites of superfunds,

NOTE Confidence: 0.7186378

 $00:06:25.695 \rightarrow 00:06:27.795$ 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

 $00:06:29.368 \longrightarrow 00:06:31.277$ 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

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

NOTE Confidence: 0.76542088125

 $00:06:36.120 \longrightarrow 00:06:38.544$ Again, we have to be taking

NOTE Confidence: 0.76542088125

 $00:06:38.544 \dashrightarrow 00:06:39.756$ everything into consideration.

NOTE Confidence: 0.76542088125

 $00:06:39.760 \longrightarrow 00:06:42.040$ So there is the federal law,

 $00:06:42.040 \rightarrow 00:06:44.800$ if there is a company that has a spill out,

NOTE Confidence: 0.76542088125

 $00{:}06{:}44.800 \dashrightarrow 00{:}06{:}47.424$ so they're getting a fine and that could

NOTE Confidence: 0.76542088125

 $00:06:47.424 \dashrightarrow 00:06:49.599$ be hundreds of millions of dollars.

NOTE Confidence: 0.76542088125

 $00:06:49.600 \rightarrow 00:06:51.800$ So this amount of money,

NOTE Confidence: 0.76542088125

 $00{:}06{:}51{.}800 \dashrightarrow 00{:}06{:}53{.}424$ some of this amount of money they

NOTE Confidence: 0.76542088125

 $00{:}06{:}53{.}424 \dashrightarrow 00{:}06{:}55{.}531$ go to the EPA and some of them

NOTE Confidence: 0.76542088125

 $00{:}06{:}55{.}531 \dashrightarrow 00{:}06{:}57{.}346$ they go to National Institute of

NOTE Confidence: 0.76542088125

 $00:06:57.346 \longrightarrow 00:06:59.371$ Environmental Health Sciences and what

NOTE Confidence: 0.76542088125

 $00:06:59.371 \dashrightarrow 00:07:01.420$ the environmental Health Sciences does NOTE Confidence: 0.76542088125

 $00:07:01.420 \longrightarrow 00:07:04.360$ takes this money and creates a centers.

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

NOTE Confidence: 0.76542088125

 $00{:}07{:}06.792 \dashrightarrow 00{:}07{:}08.875$ Center at the same time we have

NOTE Confidence: 0.76542088125

 $00:07:08.875 \rightarrow 00:07:11.288$ the the Superfund research centers

NOTE Confidence: 0.76542088125

 $00:07:11.288 \dashrightarrow 00:07:14.480$ through around the the United States.

NOTE Confidence: 0.76542088125

 $00:07:14.480 \longrightarrow 00:07:16.838$ And essentially the centers focus on

NOTE Confidence: 0.76542088125

 $00:07:16.838 \longrightarrow 00:07:19.329$ the understanding of health effects of

- NOTE Confidence: 0.76542088125
- $00:07:19.329 \rightarrow 00:07:21.474$ the exposures to hazardous substances,
- NOTE Confidence: 0.76542088125
- 00:07:21.480 --> 00:07:24.216 developing innovative technologies
- NOTE Confidence: 0.76542088125
- $00:07:24.216 \rightarrow 00:07:27.102$ to mitigate essentially size,
- NOTE Confidence: 0.76542088125
- $00:07:27.102 \dashrightarrow 00:07:29.757$ clean up and engaging communities
- NOTE Confidence: 0.76542088125
- $00:07:29.760 \longrightarrow 00:07:32.160$ affected by this environmental issues.
- NOTE Confidence: 0.76542088125
- $00{:}07{:}32.160 \dashrightarrow 00{:}07{:}35.700$ So their research contributes to the
- NOTE Confidence: 0.76542088125
- $00:07:35.700 \rightarrow 00:07:37.955$ overall goal of safeguarding the public
- NOTE Confidence: 0.76542088125
- $00{:}07{:}37{.}955 \dashrightarrow 00{:}07{:}39{.}620$ health and environmental in a reas
- NOTE Confidence: 0.76542088125
- $00{:}07{:}39{.}620$ --> $00{:}07{:}41{.}800$ of hazard or waste contamination.
- NOTE Confidence: 0.76542088125
- $00{:}07{:}41.800 \dashrightarrow 00{:}07{:}44.016$ So this is what are the centers and
- NOTE Confidence: 0.76542088125
- $00{:}07{:}44.016 \dashrightarrow 00{:}07{:}46.722$ this is as I said this is where the
- NOTE Confidence: 0.76542088125
- $00{:}07{:}46.722 \dashrightarrow 00{:}07{:}48.520$ federal money from penalties from
- NOTE Confidence: 0.76542088125
- $00:07:48.520 \dashrightarrow 00:07:51.040$ those cleanups go and they're coming.
- NOTE Confidence: 0.76542088125
- $00:07:51.040 \dashrightarrow 00:07:52.918$ So how many centers that exist?
- NOTE Confidence: 0.76542088125
- $00{:}07{:}52{.}920 \dashrightarrow 00{:}07{:}56{.}752$ We have 23 funded centers in the in
- NOTE Confidence: 0.76542088125

 $00{:}07{:}56.752 \dashrightarrow 00{:}07{:}59.550$ 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

 $00{:}08{:}01{.}680 \dashrightarrow 00{:}08{:}04{.}158$ it's a Yale Superfund Reset centre.

NOTE Confidence: 0.76542088125

 $00:08:04.160 \longrightarrow 00:08:07.443$ 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

 $00:08:14.613 \rightarrow 00:08:18.159$ our centre is on emerging contaminants.

NOTE Confidence: 0.76542088125

 $00{:}08{:}18{.}160 \dashrightarrow 00{:}08{:}20{.}638$ So what are water contaminants of

NOTE Confidence: 0.76542088125

 $00:08:20.638 \dashrightarrow 00:08:23.281$ emerging concern now these are chemicals NOTE Confidence: 0.76542088125

 $00:08:23.281 \rightarrow 00:08:26.083$ that they're detected in trace amount

NOTE Confidence: 0.76542088125

 $00{:}08{:}26.083 \dashrightarrow 00{:}08{:}29.920$ in our drinking water within global

NOTE Confidence: 0.76542088125

 $00{:}08{:}29{.}920 \dashrightarrow 00{:}08{:}33{.}852$ drinking supplies that their risk on

NOTE Confidence: 0.76542088125

 $00{:}08{:}33.852 \dashrightarrow 00{:}08{:}36.930$ human health is not fully understand

NOTE Confidence: 0.76542088125

 $00{:}08{:}37{.}027 \dashrightarrow 00{:}08{:}40{.}198$ or even not been evaluated at all.

NOTE Confidence: 0.76542088125

 $00{:}08{:}40{.}200 \dashrightarrow 00{:}08{:}40{.}711$ OK.

NOTE Confidence: 0.76542088125

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

- NOTE Confidence: 0.76542088125
- $00:08:43.266 \rightarrow 00:08:45.310$ concerns include that including

 $00{:}08{:}45{.}398 \dashrightarrow 00{:}08{:}48{.}236$ industrial chemicals such as P Fas.

NOTE Confidence: 0.76542088125

 $00:08:48.240 \rightarrow 00:08:50.396$ 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

 $00{:}08{:}53{.}704 \dashrightarrow 00{:}08{:}56{.}891$ will get educated on on 1.4 dioxane on

NOTE Confidence: 0.76542088125

 $00:08:56.891 \dashrightarrow 00:08:59.393$ some volatile solvents that they exist.

NOTE Confidence: 0.76542088125

 $00{:}08{:}59{.}400 \dashrightarrow 00{:}09{:}01{.}087$ 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

 $00:09:02.840 \dashrightarrow 00:09:05.905$ personal care products and actually

NOTE Confidence: 0.76542088125

 $00:09:05.905 \dashrightarrow 00:09:08.962$ yesterday NIHS had a webinar about the

NOTE Confidence: 0.76542088125

 $00:09:08.962 \longrightarrow 00:09:11.840$ 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

 $00:09:15.770 \longrightarrow 00:09:17.360$ end up in your drinking water.

NOTE Confidence: 0.76542088125

 $00:09:17.360 \longrightarrow 00:09:18.503$ It's truly amazing.

 $00:09:18.503 \rightarrow 00:09:20.789$ And of course you have pesticides

NOTE Confidence: 0.76542088125

 $00{:}09{:}20.789 \dashrightarrow 00{:}09{:}23.180$ and herbicides that come from

NOTE Confidence: 0.76542088125

 $00:09:23.180 \longrightarrow 00:09:25.120$ the agriculture that eventually,

NOTE Confidence: 0.76542088125

 $00:09:25.120 \rightarrow 00:09:27.760$ you know they're going to end up into

NOTE Confidence: 0.76542088125

 $00{:}09{:}27.760 \dashrightarrow 00{:}09{:}29.874$ the water table and they're going

NOTE Confidence: 0.76542088125

 $00:09:29.874 \rightarrow 00:09:32.440$ to add up to our drinking water.

NOTE Confidence: 0.76542088125

 $00{:}09{:}32{.}440 \dashrightarrow 00{:}09{:}35{.}653$ So the overall objective of our Yale

NOTE Confidence: 0.76542088125

 $00:09:35.653 \rightarrow 00:09:38.535$ 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

 $00{:}09{:}43.640 \dashrightarrow 00{:}09{:}45.768$ And what we're trying to do with

NOTE Confidence: 0.76542088125

 $00:09:45.768 \rightarrow 00:09:47.730$ trying to develop not innovative

NOTE Confidence: 0.76542088125

 $00{:}09{:}47.730 \dashrightarrow 00{:}09{:}50.880$ research in terms of the mechanisms

NOTE Confidence: 0.76542088125

 $00:09:50.880 \longrightarrow 00:09:53.500$ of toxicities that they this

NOTE Confidence: 0.76542088125

 $00:09:53.500 \rightarrow 00:09:55.472$ emerging contaminants 'cause and

NOTE Confidence: 0.76542088125

 $00:09:55.472 \dashrightarrow 00:09:58.616$ also look at the ways that we can

- NOTE Confidence: 0.76542088125
- $00:09:58.616 \longrightarrow 00:10:00.620$ mitigate that we can detect and

 $00:10:00.694 \longrightarrow 00:10:04.000$ mitigate that and also

NOTE Confidence: 0.52509516

 $00:10:04.000 \rightarrow 00:10:05.062$ inform the communities,

NOTE Confidence: 0.52509516

 $00:10:05.062 \rightarrow 00:10:07.184$ talk with the communities, listen to

NOTE Confidence: 0.52509516

 $00{:}10{:}07{.}184 \dashrightarrow 00{:}10{:}10{.}000$ their needs and talk to us about it.

NOTE Confidence: 0.52509516

 $00{:}10{:}10{.}000 \dashrightarrow 00{:}10{:}13{.}790$ 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

 $00:10:22.800 \rightarrow 00:10:25.640$ in my sense this is in my genes,

NOTE Confidence: 0.52509516

 $00:10:25.640 \longrightarrow 00:10:28.400$ it's not environmental.

NOTE Confidence: 0.52509516

 $00{:}10{:}28{.}400 \dashrightarrow 00{:}10{:}32{.}295$ So it's 1.4 dioxin and what we call

NOTE Confidence: 0.52509516

 $00:10:32.295 \longrightarrow 00:10:34.559$ its Co contaminants which is 1,

NOTE Confidence: 0.52509516

 $00{:}10{:}34{.}560 \dashrightarrow 00{:}10{:}36{.}891$ it's the dichloroethane,

NOTE Confidence: 0.52509516

 $00:10:36.891 \rightarrow 00:10:39.999$ trichloroethane and also trichloroethylene.

 $00:10:40.000 \longrightarrow 00:10:41.700$ Those are volatile solvents that

NOTE Confidence: 0.52509516

 $00{:}10{:}41.700 \dashrightarrow 00{:}10{:}44.041$ 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

 $00{:}10{:}46.832 \dashrightarrow 00{:}10{:}48.484$ this is what our center is doing

NOTE Confidence: 0.52509516

 $00{:}10{:}48{.}484 \dashrightarrow 00{:}10{:}50{.}199$ 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

 $00:10:52.920 \rightarrow 00:10:56.153$ 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

 $00:10:58.760 \rightarrow 00:11:00.788$ 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

 $00{:}11{:}05{.}520 \dashrightarrow 00{:}11{:}07{.}370$ and the Department of Energy

NOTE Confidence: 0.52509516

 $00{:}11{:}07{.}370 \dashrightarrow 00{:}11{:}08{.}480$ 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

 $00{:}11{:}11{.}245 \dashrightarrow 00{:}11{:}12{.}884$ a Superfund research program

- NOTE Confidence: 0.52509516
- $00{:}11{:}12.884 \dashrightarrow 00{:}11{:}14.994$ for the state of Connecticut.
- NOTE Confidence: 0.52509516
- $00:11:15.000 \rightarrow 00:11:17.597$ What is the issue that you have?
- NOTE Confidence: 0.52509516
- $00:11:17.600 \longrightarrow 00:11:18.662$ 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
- $00:11:20.786 \longrightarrow 00:11:22.808$ actually thank God because we
- NOTE Confidence: 0.52509516
- $00:11:22.808 \longrightarrow 00:11:24.884$ took the direction of 1.4 dioxin.
- NOTE Confidence: 0.52509516
- $00:11:24.884 \rightarrow 00:11:27.412$ Had they know anything about 1.4 dioxin?
- NOTE Confidence: 0.52509516
- $00{:}11{:}27.412 \dashrightarrow 00{:}11{:}27.718$ No.
- NOTE Confidence: 0.52509516
- $00{:}11{:}27{.}718 \dashrightarrow 00{:}11{:}30{.}266$ But they told me that this was the
- NOTE Confidence: 0.52509516
- $00:11:30.266 \rightarrow 00:11:32.597$ 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
- $00:11:34.717 \longrightarrow 00:11:37.360$ multiple sites in the state of Connecticut.
- NOTE Confidence: 0.52509516
- $00:11:37.360 \longrightarrow 00:11:40.400$ And the problem with 1.4 dioxin
- NOTE Confidence: 0.52509516
- $00{:}11{:}40{.}400 \dashrightarrow 00{:}11{:}42{.}800$ is they could not filter it.
- NOTE Confidence: 0.52509516
- $00{:}11{:}42.800 \dashrightarrow 00{:}11{:}46.556$ 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
- $00:11:48.360 \longrightarrow 00:11:50.376$ they cannot filter it If if
- NOTE Confidence: 0.52509516
- $00:11:50.376 \longrightarrow 00:11:51.720$ 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
- $00{:}11{:}53{.}960 \dashrightarrow 00{:}11{:}56{.}669$ So that was a major issue and This is
- NOTE Confidence: 0.52509516
- $00:11:56.669 \rightarrow 00:11:59.512$ why we chose to go with 1.4 dioxane.
- NOTE Confidence: 0.52509516
- $00{:}11{:}59{.}512 \dashrightarrow 00{:}12{:}01{.}430$ 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
- $00{:}12{:}02{.}980 \dashrightarrow 00{:}12{:}04{.}840$ not because I got the grant,
- NOTE Confidence: 0.52509516
- $00{:}12{:}04.840 \dashrightarrow 00{:}12{:}06.688$ I'm really proud because I brought
- NOTE Confidence: 0.52509516
- $00{:}12{:}06{.}688 \dashrightarrow 00{:}12{:}08{.}340$ 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
- $00:12:09.600 \longrightarrow 00:12:11.040$ the School of Medicine,
- NOTE Confidence: 0.52509516
- $00:12:11.040 \longrightarrow 00:12:12.840$ the engineering and the environment.
- NOTE Confidence: 0.52509516
- $00:12:12.840 \longrightarrow 00:12:14.480$ And we developed this program.
- NOTE Confidence: 0.52509516
- $00:12:14.480 \longrightarrow 00:12:16.080$ This program consists of,

- NOTE Confidence: 0.52509516
- 00:12:16.080 --> 00:12:17.680 as you can see,
- NOTE Confidence: 0.52509516
- $00{:}12{:}17.680 \dashrightarrow 00{:}12{:}20.560$ four research projects and four course.
- NOTE Confidence: 0.52509516
- $00:12:20.560 \rightarrow 00:12:22.400$ We have the administrative core,
- NOTE Confidence: 0.52509516
- $00:12:22.400 \rightarrow 00:12:24.520$ we have the training core,
- NOTE Confidence: 0.52509516
- $00:12:24.520 \longrightarrow 00:12:28.520$ 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
- $00:12:30.680 \rightarrow 00:12:32.828$ We also have the community engagement
- NOTE Confidence: 0.52509516
- $00:12:32.828 \longrightarrow 00:12:35.518$ and of course we have the training,
- NOTE Confidence: 0.52509516
- $00:12:35.520 \dashrightarrow 00:12:37.080$ the training core that you're going.
- NOTE Confidence: 0.52509516
- $00:12:37.080 \longrightarrow 00:12:39.512$ I'll go in a little bit more details
- NOTE Confidence: 0.52509516
- $00:12:39.512 \longrightarrow 00:12:41.637$ when we move forward on this.
- NOTE Confidence: 0.52509516
- 00:12:41.640 --> 00:12:42.702 So again,
- NOTE Confidence: 0.52509516
- $00{:}12{:}42.702 \dashrightarrow 00{:}12{:}46.080$ 11 more time it was the concern
- NOTE Confidence: 0.52509516
- $00{:}12{:}46.080 \dashrightarrow 00{:}12{:}47.160$ of the public,
- NOTE Confidence: 0.52509516
- $00:12:47.160 \longrightarrow 00:12:49.800$ of the public institutions was on
- NOTE Confidence: 0.52509516

 $00:12:49.800 \longrightarrow 00:12:52.356$ 1.4 dioxin for a particular reason.

NOTE Confidence: 0.52509516

 $00{:}12{:}52{.}360 \dashrightarrow 00{:}12{:}56{.}560$ Because it is a possible human carcinogen.

NOTE Confidence: 0.52509516

 $00:12:56.560 \longrightarrow 00:13:00.144$ It has been found that it causes

NOTE Confidence: 0.52509516

 $00:13:00.144 \longrightarrow 00:13:01.680$ cancer in animals,

NOTE Confidence: 0.52509516

 $00{:}13{:}01{.}680 \dashrightarrow 00{:}13{:}04{.}770$ but now there is no epidemiological

NOTE Confidence: 0.52509516

 $00:13:04.770 \longrightarrow 00:13:06.730$ studies yet in humans.

NOTE Confidence: 0.52509516

 $00:13:06.730 \longrightarrow 00:13:09.520$ This is why it's emerging contaminants

NOTE Confidence: 0.52509516

 $00{:}13{:}09{.}520 \dashrightarrow 00{:}13{:}12{.}306$ 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

 $00{:}13{:}14.595 \dashrightarrow 00{:}13{:}16.631$ by US Environmental Protection

NOTE Confidence: 0.52509516

 $00{:}13{:}16{.}631 \dashrightarrow 00{:}13{:}21{.}332$ 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

 $00:13:23.940 \longrightarrow 00:13:26.320$ 2013 and 2015 and you will see

NOTE Confidence: 0.73635834

 $00:13:26.396 \longrightarrow 00:13:28.998$ the map. It is spread

NOTE Confidence: 0.73635834

 $00:13:28.998 \longrightarrow 00:13:30.996$ throughout United States.

NOTE Confidence: 0.73635834

 $00{:}13{:}31.000 \dashrightarrow 00{:}13{:}33.895$ So it's been also characterized

- NOTE Confidence: 0.73635834
- $00:13:33.895 \longrightarrow 00:13:37.227$ 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
- $00{:}13{:}41{.}520 \dashrightarrow 00{:}13{:}45{.}124$ you know metabolized by bacterial
- NOTE Confidence: 0.73635834
- $00:13:45.124 \dashrightarrow 00:13:48.864$ species and so on and it goes there.
- NOTE Confidence: 0.73635834
- $00{:}13{:}48.864 \dashrightarrow 00{:}13{:}50.940$ This is from the chemical Environmental
- NOTE Confidence: 0.73635834
- $00{:}13{:}51{.}001 \dashrightarrow 00{:}13{:}53{.}746$ 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
- $00:13:59.576 \rightarrow 00:14:01.994$ we oversee what it was available,
- NOTE Confidence: 0.73635834
- $00:14:02.000 \rightarrow 00:14:04.480$ what was the scientific evidence,
- NOTE Confidence: 0.73635834
- $00{:}14{:}04{.}480 \dashrightarrow 00{:}14{:}07{.}040$ what was the demological studies,
- NOTE Confidence: 0.73635834
- $00{:}14{:}07{.}040 \dashrightarrow 00{:}14{:}10{.}078$ what are the strategies to mitigate that.
- NOTE Confidence: 0.73635834
- $00:14:10.080 \longrightarrow 00:14:13.112$ And we we had that on a very
- NOTE Confidence: 0.73635834
- $00:14:13.112 \rightarrow 00:14:15.451$ nice review that actually helped
- NOTE Confidence: 0.73635834

- $00:14:15.451 \longrightarrow 00:14:17.952$ us to get the team together.
- NOTE Confidence: 0.73635834
- $00{:}14{:}17{.}952 \dashrightarrow 00{:}14{:}21{.}360$ 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
- $00{:}14{:}24{.}496 \dashrightarrow 00{:}14{:}27{.}240$ but the concern and the most most
- NOTE Confidence: 0.73635834
- $00{:}14{:}27{.}333 \dashrightarrow 00{:}14{:}29{.}502$ prevalent is the 1.4 dioxane.
- NOTE Confidence: 0.73635834
- $00{:}14{:}29{.}502 \dashrightarrow 00{:}14{:}31{.}357$ 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
- $00:14:33.961 \longrightarrow 00:14:35.779$ all details of this because we
- NOTE Confidence: 0.73635834
- $00:14:35.779 \rightarrow 00:14:37.798$ can talk about for a long time,
- NOTE Confidence: 0.73635834
- $00:14:37.800 \rightarrow 00:14:41.582$ but it was first synthesized in 1863 and
- NOTE Confidence: 0.73635834
- $00:14:41.582 \rightarrow 00:14:45.439$ initially it was used as a stabilizer.
- NOTE Confidence: 0.73635834
- $00{:}14{:}45{.}440 \dashrightarrow 00{:}14{:}50{.}480$ It was used as a stabilizer for the
- NOTE Confidence: 0.73635834
- $00:14:50.480 \rightarrow 00:14:55.156$ for the solvents, the DCATCE and DCA,
- NOTE Confidence: 0.73635834
- $00:14:55.160 \rightarrow 00:14:57.480$ and what happens is this,
- NOTE Confidence: 0.73635834
- $00:14:57.480 \rightarrow 00:15:02.240$ this solvents, they were covered on.

- NOTE Confidence: 0.73635834
- $00:15:02.240 \longrightarrow 00:15:03.320$ They were.

 $00:15:03.320 \longrightarrow 00:15:06.020$ They were transferred on aluminium

NOTE Confidence: 0.73635834

 $00{:}15{:}06{.}020 \dashrightarrow 00{:}15{:}07{.}652$ containers and the aluminum containers,

NOTE Confidence: 0.73635834

 $00{:}15{:}07.652 \dashrightarrow 00{:}15{:}08.198$ you know,

NOTE Confidence: 0.73635834

 $00{:}15{:}08{.}200 \dashrightarrow 00{:}15{:}10{.}420$ they have a cover inside which

NOTE Confidence: 0.73635834

 $00:15:10.420 \longrightarrow 00:15:13.168$ is aluminum and they protect from

NOTE Confidence: 0.73635834

 $00:15:13.168 \rightarrow 00:15:15.678$ being interacting with the metal.

NOTE Confidence: 0.73635834

 $00:15:15.680 \rightarrow 00:15:18.109$ So what happened is after a certain

NOTE Confidence: 0.73635834

 $00{:}15{:}18{.}109 \dashrightarrow 00{:}15{:}20{.}046$ period of time these solvents

NOTE Confidence: 0.73635834

 $00:15:20.046 \rightarrow 00:15:22.506$ 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

 $00:15:24.440 \longrightarrow 00:15:26.925$ 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

 $00{:}15{:}28{.}240 \dashrightarrow 00{:}15{:}30{.}640$ it could block the catalysis

NOTE Confidence: 0.73635834

 $00:15:30.640 \rightarrow 00:15:32.080$ of this reaction.

 $00:15:32.080 \rightarrow 00:15:34.733$ So they were using 1.4 dioxane as

NOTE Confidence: 0.73635834

 $00{:}15{:}34{.}733 \dashrightarrow 00{:}15{:}37{.}391$ a stabilizer of those chemicals not

NOTE Confidence: 0.73635834

 $00:15:37.391 \longrightarrow 00:15:40.271$ only to protect the toxicity but

NOTE Confidence: 0.73635834

 $00{:}15{:}40{.}271 \dashrightarrow 00{:}15{:}42{.}919$ stabilize the solvents for their use.

NOTE Confidence: 0.73635834

 $00:15:42.920 \rightarrow 00:15:44.768$ And what we're using this everything

NOTE Confidence: 0.73635834

 $00:15:44.768 \longrightarrow 00:15:46.963$ that you can imagine, I'll show you.

NOTE Confidence: 0.73635834

 $00:15:46.963 \rightarrow 00:15:50.280$ So it was used as a stabilizer to begin with,

NOTE Confidence: 0.73635834

 $00:15:50.280 \rightarrow 00:15:52.400$ but later as you can see from this,

NOTE Confidence: 0.73635834

 $00{:}15{:}52{.}400 \dashrightarrow 00{:}15{:}55{.}199$ it has been used in many in many areas.

NOTE Confidence: 0.73635834

 $00:15:55.200 \rightarrow 00:15:56.920$ So this is the uses,

NOTE Confidence: 0.73635834

 $00{:}15{:}56{.}920 \dashrightarrow 00{:}15{:}59{.}152$ I'm not going to go in great details

NOTE Confidence: 0.73635834

 $00{:}15{:}59{.}152 \dashrightarrow 00{:}16{:}01{.}599$ 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

 $00{:}16{:}05{.}640 \dashrightarrow 00{:}16{:}07{.}464$ printing in and paints,

NOTE Confidence: 0.73635834

 $00:16:07.464 \longrightarrow 00:16:09.216$ adhesives, brake fluids,

NOTE Confidence: 0.73635834

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

 $00:16:13.260 \rightarrow 00:16:16.590$ remover and also antifreeze and deicing.

NOTE Confidence: 0.73635834

 $00{:}16{:}16{.}590 \dashrightarrow 00{:}16{:}19{.}460$ The stuff that you they throwing on

NOTE Confidence: 0.73635834

 $00{:}16{:}19.532 \dashrightarrow 00{:}16{:}21.814$ the airplanes before we take off on

NOTE Confidence: 0.73635834

 $00:16:21.814 \longrightarrow 00:16:24.390$ this it has 1.4 dioxide quite a bit

NOTE Confidence: 0.73635834

 $00:16:24.390 \rightarrow 00:16:27.617$ and what we end up with on the ground.

NOTE Confidence: 0.73635834

 $00{:}16{:}27.617 \dashrightarrow 00{:}16{:}30.550$ OK so pesticides and some of the

NOTE Confidence: 0.73635834

 $00:16:30.641 \rightarrow 00:16:34.720$ pesticides they have up to 50% of

NOTE Confidence: 0.73635834

 $00:16:34.720 \longrightarrow 00:16:38.632$ 1.4 dioxide 50% anyway and also

NOTE Confidence: 0.73635834

 $00{:}16{:}38.632 \dashrightarrow 00{:}16{:}40.752$ 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

 $00{:}16{:}43.153 \dashrightarrow 00{:}16{:}46.117$ 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

 $00{:}16{:}50{.}980 \dashrightarrow 00{:}16{:}53{.}680$ really degraded easily and can travel.

NOTE Confidence: 0.73635834

 $00{:}16{:}53.680 \dashrightarrow 00{:}16{:}56.280$ It can travel everywhere toxicity.

- 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
- $00:16:57.960 \rightarrow 00:17:00.876$ as a possible human carcinogen by
- NOTE Confidence: 0.73635834
- $00{:}17{:}00.876 \dashrightarrow 00{:}17{:}03.012$ 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
- $00{:}17{:}05{.}571 \dashrightarrow 00{:}17{:}07{.}559$ are plenty of concerns.
- NOTE Confidence: 0.365910792857143
- $00:17:07.560 \longrightarrow 00:17:08.840$ There is no federal regulation.
- NOTE Confidence: 0.365910792857143
- $00{:}17{:}08.840 \dashrightarrow 00{:}17{:}10.440$ Well, we don't have federal
- NOTE Confidence: 0.365910792857143
- $00:17:10.440 \longrightarrow 00:17:12.232$ 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
- $00:17:14.536 \rightarrow 00:17:16.530$ watch the movie Dark Waters,
- NOTE Confidence: 0.365910792857143
- $00:17:16.530 \longrightarrow 00:17:18.720$ which I recommend that you do,
- NOTE Confidence: 0.365910792857143
- $00:17:18.720 \rightarrow 00:17:20.757$ you realize what what I'm talking about?
- NOTE Confidence: 0.365910792857143
- $00{:}17{:}20.760 \dashrightarrow 00{:}17{:}23.520$ About PFAS and regulatory issues.
- NOTE Confidence: 0.365910792857143
- $00:17:23.520 \longrightarrow 00:17:26.556$ So as I told you before,

 $00:17:26.560 \longrightarrow 00:17:29.200$ what do you find, 1.4 Dioxane.

NOTE Confidence: 0.365910792857143

 $00{:}17{:}29{.}200 \dashrightarrow 00{:}17{:}30{.}955$ You find all the other

NOTE Confidence: 0.365910792857143

 $00{:}17{:}30{.}955 \dashrightarrow 00{:}17{:}32{.}359$ 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

 $00:17:34.394 \longrightarrow 00:17:36.215$ 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

 $00:17:39.320 \longrightarrow 00:17:40.420$ 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

 $00{:}17{:}45{.}248 \dashrightarrow 00{:}17{:}49{.}338$ 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

 $00:17:52.732 \rightarrow 00:17:57.040$ So you expect to have it also in the rivers,

NOTE Confidence: 0.365910792857143

 $00:17:57.040 \longrightarrow 00:18:00.120$ 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

 $00{:}18{:}03.445 \dashrightarrow 00{:}18{:}07.640$ and you can see there are white dots,

- 00:18:07.640 --> 00:18:09.029 I mean dots,
- NOTE Confidence: 0.365910792857143
- $00:18:09.029 \longrightarrow 00:18:11.807$ Gray dots and red dots and
- NOTE Confidence: 0.365910792857143
- $00:18:11.807 \longrightarrow 00:18:13.639$ essentially this is above,
- NOTE Confidence: 0.365910792857143
- $00:18:13.640 \longrightarrow 00:18:17.150$ below and or around the
- NOTE Confidence: 0.365910792857143
- $00{:}18{:}17{.}150 \dashrightarrow 00{:}18{:}19{.}256$ 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
- $00:18:22.400 \longrightarrow 00:18:24.056$ This is a reference dose that
- NOTE Confidence: 0.365910792857143
- $00{:}18{:}24.056 \dashrightarrow 00{:}18{:}26.141$ this is the dose that it can
- NOTE Confidence: 0.365910792857143
- $00:18:26.141 \longrightarrow 00:18:27.676$ cause one cancer per million.
- NOTE Confidence: 0.365910792857143
- $00:18:27.680 \longrightarrow 00:18:28.220$ OK.
- NOTE Confidence: 0.365910792857143
- 00:18:28.220 --> 00:18:30.920 And again this is advisory
- NOTE Confidence: 0.365910792857143
- $00:18:30.920 \longrightarrow 00:18:32.000$ 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
- $00:18:35.440 \longrightarrow 00:18:36.912$ you cannot believe if
- NOTE Confidence: 0.365910792857143
- $00:18:36.912 \longrightarrow 00:18:38.752$ 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
- $00:18:40.915 \longrightarrow 00:18:42.639$ comes from well water.
- NOTE Confidence: 0.365910792857143
- $00:18:42.640 \rightarrow 00:18:44.080$ And most of these areas,
- NOTE Confidence: 0.365910792857143
- $00:18:44.080 \rightarrow 00:18:47.118$ they're really high levels of 1.4 dioxide.
- NOTE Confidence: 0.365910792857143
- $00:18:47.120 \longrightarrow 00:18:48.160$ 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
- $00{:}18{:}51{.}010 \dashrightarrow 00{:}18{:}54{.}303$ strong and put the legislation and
- NOTE Confidence: 0.365910792857143
- $00:18:54.303 \longrightarrow 00:18:57.119$ there is a law in New York now
- NOTE Confidence: 0.365910792857143
- $00:18:57.119 \longrightarrow 00:18:59.520$ that prohibits the manufacturers
- NOTE Confidence: 0.365910792857143
- $00{:}18{:}59{.}520 \dashrightarrow 00{:}19{:}03{.}188$ to put 1.4 dioxane in detergents
- NOTE Confidence: 0.365910792857143
- $00:19:03.188 \longrightarrow 00:19:04.919$ and household items.
- NOTE Confidence: 0.365910792857143
- $00:19:04.920 \longrightarrow 00:19:06.509$ 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 $\operatorname{-->}$ 00:19:10.260 at least they put that and they
- NOTE Confidence: 0.365910792857143
- $00:19:10.319 \longrightarrow 00:19:12.239$ 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

 $00:19:17.498 \longrightarrow 00:19:20.081$ it has 1.4 dioxane and everything is

NOTE Confidence: 0.365910792857143

 $00:19:20.081 \rightarrow 00:19:22.396$ going to go down to the water table.

NOTE Confidence: 0.365910792857143

 $00:19:22.400 \longrightarrow 00:19:24.560$ And especially in Long Island,

NOTE Confidence: 0.365910792857143

 $00{:}19{:}24.560 \dashrightarrow 00{:}19{:}27.920$ the public water comes from well water.

NOTE Confidence: 0.365910792857143

 $00{:}19{:}27{.}920 \dashrightarrow 00{:}19{:}29{.}360$ So it's a major concern.

NOTE Confidence: 0.365910792857143

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

NOTE Confidence: 0.365910792857143

 $00{:}19{:}31{.}100 \dashrightarrow 00{:}19{:}34{.}565$ which was one of the reasons that

NOTE Confidence: 0.365910792857143

 $00{:}19{:}34.565 \dashrightarrow 00{:}19{:}37.165$ 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

 $00:19:40.080 \longrightarrow 00:19:41.454$ major, major contamination.

NOTE Confidence: 0.365910792857143

00:19:41.454 $\operatorname{-->}$ 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

 $00:19:46.800 \dashrightarrow 00:19:49.336$ and you know it's still getting

- NOTE Confidence: 0.365910792857143
- $00:19:49.336 \longrightarrow 00:19:51.676$ a lot of discharges in there.
- NOTE Confidence: 0.365910792857143
- $00:19:51.680 \longrightarrow 00:19:53.152$ Is it only there?
- NOTE Confidence: 0.365910792857143
- $00:19:53.152 \longrightarrow 00:19:55.116$ No, we have the case of Michigan,
- NOTE Confidence: 0.365910792857143
- $00:19:55.120 \longrightarrow 00:19:56.680$ which I'll explain you later.
- NOTE Confidence: 0.365910792857143
- $00:19:56.680 \longrightarrow 00:19:58.048$ 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
- $00:20:00.534 \longrightarrow 00:20:02.349$ 1.4 dioxane sitting right there
- NOTE Confidence: 0.365910792857143
- $00:20:02.349 \longrightarrow 00:20:04.640$ 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
- $00:20:07.972 \longrightarrow 00:20:12.800$ years that the public water had 1.4 dioxane.
- NOTE Confidence: 0.365910792857143
- $00:20:12.800 \rightarrow 00:20:14.480$ And what happened there is a lawsuit.
- NOTE Confidence: 0.365910792857143
- $00:20:14.480 \longrightarrow 00:20:16.478$ I haven't followed up the details,
- NOTE Confidence: 0.365910792857143
- $00{:}20{:}16.480 \dashrightarrow 00{:}20{:}19.646$ but in March 23 of 2023.
- NOTE Confidence: 0.365910792857143
- $00{:}20{:}19.646 \dashrightarrow 00{:}20{:}21.876$ The water companies shoot the
- NOTE Confidence: 0.365910792857143
- $00:20:21.876 \longrightarrow 00:20:23.660$ manufacturers for putting 1.4
- NOTE Confidence: 0.365910792857143

 $00:20:23.730 \longrightarrow 00:20:25.238$ dioxin into the river,

NOTE Confidence: 0.365910792857143

 $00:20:25.240 \longrightarrow 00:20:27.090$ which eventually ended up into

NOTE Confidence: 0.365910792857143

 $00:20:27.090 \longrightarrow 00:20:28.200$ the drinking water.

NOTE Confidence: 0.365910792857143

 $00:20:28.200 \rightarrow 00:20:30.820$ So there's a lot of things going on and this

NOTE Confidence: 0.6750126

 $00:20:30.888 \rightarrow 00:20:32.558$ is happening just right now.

NOTE Confidence: 0.6750126

 $00{:}20{:}32{.}560 \dashrightarrow 00{:}20{:}35{.}000$ That was again in a different area in

NOTE Confidence: 0.6750126

 $00{:}20{:}35{.}000 \dashrightarrow 00{:}20{:}36{.}957$ 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

 $00{:}20{:}42.380 \dashrightarrow 00{:}20{:}44.960$ 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

 $00:20:49.020 \rightarrow 00:20:51.804$ 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

 $00{:}20{:}54{.}318 \dashrightarrow 00{:}20{:}57{.}146$ this is this is something that due to

NOTE Confidence: 0.6750126

 $00:20:57.146 \longrightarrow 00:20:59.348$ the difficulties in determining that

NOTE Confidence: 0.6750126

 $00:20:59.348 \rightarrow 00:21:02.150$ and having the assays but eventually

NOTE Confidence: 0.6750126

 $00:21:02.227 \rightarrow 00:21:04.600$ 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

 $00:21:08.400 \longrightarrow 00:21:10.472 \text{ most of the toxicity what we know}$

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

 $00:21:12.940 \rightarrow 00:21:15.600$ to do is from liver and kidney OK.

NOTE Confidence: 0.6750126

 $00{:}21{:}15{.}600 \dashrightarrow 00{:}21{:}18{.}400$ But however they have been found that

NOTE Confidence: 0.6750126

 $00{:}21{:}18{.}400 \dashrightarrow 00{:}21{:}21{.}220$ there is some effects also in nasal

NOTE Confidence: 0.6750126

 $00:21:21.220 \longrightarrow 00:21:24.730$ and eye liver toxist is dose dependent

NOTE Confidence: 0.6750126

 $00:21:24.730 \rightarrow 00:21:26.914$ 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

 $00{:}21{:}35{.}160 \dashrightarrow 00{:}21{:}37{.}692$ 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

 $00{:}21{:}40{.}581 \dashrightarrow 00{:}21{:}43{.}356$ and and and enzyme leakage.

NOTE Confidence: 0.6750126

 $00{:}21{:}43.360 \dashrightarrow 00{:}21{:}45.766$ The kidney toxicity manifests as a

 $00:21:45.766 \rightarrow 00:21:48.159$ generation of the cortical tube cells,

NOTE Confidence: 0.6750126

 $00{:}21{:}48.160 \dashrightarrow 00{:}21{:}52.080$ tubular tubular neclosis and

NOTE Confidence: 0.6750126

 $00:21:52.080 \longrightarrow 00:21:54.040$ chloro nephritis.

NOTE Confidence: 0.6750126

 $00:21:54.040 \longrightarrow 00:21:56.364$ So the other thing that we have

NOTE Confidence: 0.6750126

 $00{:}21{:}56{.}364 \dashrightarrow 00{:}21{:}58{.}785$ discovered in our and which I think

NOTE Confidence: 0.6750126

 $00{:}21{:}58{.}785 \dashrightarrow 00{:}22{:}01{.}110$ it could be very disturbing but is NOTE Confidence: 0.6750126

 $00:22:01.110 \longrightarrow 00:22:03.315$ that we found out that there is

NOTE Confidence: 0.6750126

 $00:22:03.315 \longrightarrow 00:22:05.762$ a potential disruption of glucose

NOTE Confidence: 0.6750126

 $00{:}22{:}05.762 \dashrightarrow 00{:}22{:}08.834$ 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

 $00{:}22{:}10.880 \dashrightarrow 00{:}22{:}13.664$ We have it here.

NOTE Confidence: 0.6750126

 $00{:}22{:}13.664 \dashrightarrow 00{:}22{:}16.160$ So the studies and I'm not going to go,

NOTE Confidence: 0.6750126

 $00{:}22{:}16.160 \dashrightarrow 00{:}22{:}19.156$ I can by pass because time is running.

NOTE Confidence: 0.6750126

 $00:22:19.160 \longrightarrow 00:22:20.040$ There are a lot of,

NOTE Confidence: 0.6750126

 $00{:}22{:}20.040 \dashrightarrow 00{:}22{:}22.609$ a lot of experiments both in mice

NOTE Confidence: 0.6750126

 $00:22:22.609 \rightarrow 00:22:25.582$ 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.

 $00{:}22{:}28.360 \dashrightarrow 00{:}22{:}31.657$ And you know it has been shown

NOTE Confidence: 0.6750126

 $00:22:31.657 \longrightarrow 00:22:34.576$ that you know it is occurring in

NOTE Confidence: 0.6750126

 $00:22:34.576 \rightarrow 00:22:36.716$ various labs throughout the year,

NOTE Confidence: 0.6750126

 $00:22:36.720 \longrightarrow 00:22:38.560$ throughout the globe and they

NOTE Confidence: 0.6750126

 $00:22:38.560 \longrightarrow 00:22:40.032$ found the same thing.

NOTE Confidence: 0.6750126

 $00{:}22{:}40.040 \dashrightarrow 00{:}22{:}42.623$ So one of the thing though that it was

NOTE Confidence: 0.6750126

 $00:22:42.623 \rightarrow 00:22:45.718$ a little bit puzzling is when they took,

NOTE Confidence: 0.6750126

 $00:22:45.720 \longrightarrow 00:22:47.176$ they did the genotoxicity.

NOTE Confidence: 0.6750126

 $00{:}22{:}47.176 \dashrightarrow 00{:}22{:}50.173$ In other words they did the aims test

NOTE Confidence: 0.6750126

 $00{:}22{:}50{.}173 \dashrightarrow 00{:}22{:}52{.}399$ 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

 $00{:}22{:}54{.}640 \dashrightarrow 00{:}22{:}56{.}432$ for this 1.4 dioxin.

NOTE Confidence: 0.6750126

 $00{:}22{:}56{.}440 \dashrightarrow 00{:}22{:}58{.}240$ So they said well it's not the mutagen,

NOTE Confidence: 0.6750126

 $00:22:58.240 \longrightarrow 00:22:59.368$ maybe it's a promoter.

 $00:22:59.368 \rightarrow 00:23:01.839$ As you can see on the 4th bullet,

NOTE Confidence: 0.6750126

 $00:23:01.840 \longrightarrow 00:23:02.225$ well,

NOTE Confidence: 0.6750126

 $00{:}23{:}02{.}225 \dashrightarrow 00{:}23{:}04{.}535$ 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

 $00{:}23{:}07{.}020 \dashrightarrow 00{:}23{:}10{.}110$ that indicates that 1.4 dioxin can

NOTE Confidence: 0.6750126

 $00{:}23{:}10{.}110 \dashrightarrow 00{:}23{:}13{.}160$ induce DNA adducts as well.

NOTE Confidence: 0.6750126

 $00:23:13.160 \longrightarrow 00:23:15.560$ OK, and they're going on that.

NOTE Confidence: 0.6750126

 $00:23:15.560 \rightarrow 00:23:17.996$ But what really triggered my interest

NOTE Confidence: 0.6750126

 $00{:}23{:}17{.}996 \dashrightarrow 00{:}23{:}20{.}687$ 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

 $00{:}23{:}27{.}512 \dashrightarrow 00{:}23{:}30{.}528$ 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

 $00{:}23{:}33{.}625 \dashrightarrow 00{:}23{:}35{.}695$ dioxane and they did the studies

NOTE Confidence: 0.6750126

 $00{:}23{:}35{.}695 \dashrightarrow 00{:}23{:}37{.}439$ in both mice and rats.

NOTE Confidence: 0.6750126

 $00:23:37.440 \longrightarrow 00:23:39.798$ 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

 $00:23:42.734 \longrightarrow 00:23:45.723$ dioxin belongs to one or the other

NOTE Confidence: 0.6750126

 $00{:}23{:}45{.}723 \dashrightarrow 00{:}23{:}48{.}518$ group based on gene expression.

NOTE Confidence: 0.6750126

 $00:23:48.520 \longrightarrow 00:23:50.172$ And what they found as you can

NOTE Confidence: 0.6750126

 $00:23:50.172 \longrightarrow 00:23:52.200$ see from the from the slides

NOTE Confidence: 0.6750126

 $00:23:52.200 \longrightarrow 00:23:54.840$ 1.4 dioxin is a distinct form.

NOTE Confidence: 0.6750126

 $00{:}23{:}54{.}840 \dashrightarrow 00{:}23{:}57{.}616$ So in other words it's it's does not

NOTE Confidence: 0.6750126

 $00{:}23{:}57.616 \dashrightarrow 00{:}24{:}00{.}128$ belong to any of these two models

NOTE Confidence: 0.6750126

 $00{:}24{:}00{.}128 \dashrightarrow 00{:}24{:}02{.}776$ which I thought it was very interesting

NOTE Confidence: 0.6750126

 $00{:}24{:}02{.}776 \dashrightarrow 00{:}24{:}05{.}226$ and it was worth of exploring.

NOTE Confidence: 0.6750126

 $00{:}24{:}05{.}226 \dashrightarrow 00{:}24{:}08{.}588$ 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

 $00{:}24{:}11{.}361 \dashrightarrow 00{:}24{:}14.076$ on liver cancer and biomarkers.

NOTE Confidence: 0.6553215

 $00{:}24{:}14.080 \dashrightarrow 00{:}24{:}17.900$ So essentially we're trying to use mouse

NOTE Confidence: 0.6553215

 $00{:}24{:}17.900 \dashrightarrow 00{:}24{:}21.400$ models, human cells and organization,

- $00:24:21.400 \longrightarrow 00:24:24.520$ also zebra fish to dissect the
- NOTE Confidence: 0.6553215
- $00:24:24.520 \longrightarrow 00:24:27.280$ molecular mechanisms of causing cancer.
- NOTE Confidence: 0.6553215
- $00{:}24{:}27{.}280 \dashrightarrow 00{:}24{:}29{.}560$ 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
- $00{:}24{:}32{.}200 \dashrightarrow 00{:}24{:}35{.}256$ 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
- $00:24:37.724 \longrightarrow 00:24:39.656$ And this was the major obstacle
- NOTE Confidence: 0.6553215
- $00:24:39.656 \longrightarrow 00:24:42.815$ that I had to go through for the
- NOTE Confidence: 0.6553215
- $00{:}24{:}42.815 \dashrightarrow 00{:}24{:}44.039$ resubmission because every body,
- NOTE Confidence: 0.6553215
- $00{:}24{:}44.040 \dashrightarrow 00{:}24{:}46.630$ 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
- $00:24:48.359 \longrightarrow 00:24:50.448$ 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
- $00:24:53.000 \rightarrow 00:24:54.116$ To make a Long story short,
- NOTE Confidence: 0.6553215
- $00:24:54.120 \longrightarrow 00:24:57.155$ 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
- $00{:}25{:}00{.}399 \dashrightarrow 00{:}25{:}01{.}518$ the epidemiological studies.

 $00:25:01.520 \longrightarrow 00:25:03.676$ However, the NIHS said we do want

NOTE Confidence: 0.6553215

 $00:25:03.676 \longrightarrow 00:25:06.039$ you to do something about it.

NOTE Confidence: 0.6553215

 $00:25:06.040 \rightarrow 00:25:10.004$ So what we decided was exposure assessment.

NOTE Confidence: 0.6553215

 $00{:}25{:}10.004 \dashrightarrow 00{:}25{:}12.914$ So in other words epidemiological

NOTE Confidence: 0.6553215

 $00{:}25{:}12{.}914 \dashrightarrow 00{:}25{:}16{.}502$ studies in much less number of samples.

NOTE Confidence: 0.6553215

 $00:25:16.502 \longrightarrow 00:25:19.346$ So the Project 3 is something

NOTE Confidence: 0.6553215

 $00{:}25{:}19{.}346 \dashrightarrow 00{:}25{:}22{.}285$ that we're trying to detect the

NOTE Confidence: 0.6553215

 $00{:}25{:}22{.}285 \dashrightarrow 00{:}25{:}24{.}310$ 1.4 dioxin and Co contaminants

NOTE Confidence: 0.6553215

 $00:25:24.310 \longrightarrow 00:25:26.440$ in areas that they're there.

NOTE Confidence: 0.6553215

 $00:25:26.440 \longrightarrow 00:25:29.368$ My whole idea in here is can we

NOTE Confidence: 0.6553215

 $00{:}25{:}29{.}368 \dashrightarrow 00{:}25{:}31{.}916$ develop a system that it can be

NOTE Confidence: 0.6553215

 $00{:}25{:}31{.}916 \dashrightarrow 00{:}25{:}34{.}798$ online that you can monitor the area,

NOTE Confidence: 0.6553215

 $00{:}25{:}34{.}800 \dashrightarrow 00{:}25{:}37{.}621$ do the bio monitoring from your computer

NOTE Confidence: 0.6553215

 $00:25:37.621 \rightarrow 00:25:41.515$ or the EPA can you know get the information.

- $00:25:41.520 \longrightarrow 00:25:42.920$ 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
- $00:25:46.336 \longrightarrow 00:25:48.337$ that when I talked to them about
- NOTE Confidence: 0.36653194
- $00{:}25{:}48{.}337 \dashrightarrow 00{:}25{:}49{.}795$ they said I cannot be done.
- NOTE Confidence: 0.36653194
- $00{:}25{:}49{.}800 \dashrightarrow 00{:}25{:}51{.}515$ Anyway, to make a Long story short,
- NOTE Confidence: 0.36653194
- $00:25:51.520 \rightarrow 00:25:52.678$ 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
- $00:25:54.000 \longrightarrow 00:25:57.290$ but the the idea of having those
- NOTE Confidence: 0.36653194
- $00{:}25{:}57{.}290 \dashrightarrow 00{:}25{:}59{.}668$ sensors is really hot right now in
- NOTE Confidence: 0.36653194
- $00{:}25{:}59.668 \dashrightarrow 00{:}26{:}01.758$ all the aspects that you can do.
- NOTE Confidence: 0.36653194
- $00:26:01.760 \longrightarrow 00:26:04.120$ Finally, the project for as I told you,
- NOTE Confidence: 0.36653194
- $00:26:04.120 \rightarrow 00:26:07.480$ and this is another very important project,
- NOTE Confidence: 0.36653194
- $00:26:07.480 \longrightarrow 00:26:09.840$ 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
- $00:26:11.880 \longrightarrow 00:26:14.560 \text{ most likely might have } 1.4 \text{ dioxide.}$
- NOTE Confidence: 0.36653194
- $00:26:14.560 \longrightarrow 00:26:16.160$ 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?

 $00{:}26{:}18.800 \dashrightarrow 00{:}26{:}21.600$ Well, you can purify it with reverse osmosis,

NOTE Confidence: 0.36653194

 $00:26:21.600 \rightarrow 00:26:24.334$ but do you have \$15,000 to?

NOTE Confidence: 0.36653194

 $00:26:24.334 \rightarrow 00:26:26.296$ So it's just for reduce versus

NOTE Confidence: 0.36653194

 $00:26:26.296 \longrightarrow 00:26:27.719$ 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

 $00:26:29.760 \rightarrow 00:26:31.480$ 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

 $00:26:32.920 \longrightarrow 00:26:34.000$ justice as well.

NOTE Confidence: 0.36653194

 $00:26:34.000 \longrightarrow 00:26:35.680$ So there's a lot of issues that

NOTE Confidence: 0.36653194

 $00:26:35.680 \longrightarrow 00:26:37.439$ need to be discussing there.

NOTE Confidence: 0.36653194

 $00:26:37.440 \longrightarrow 00:26:39.660$ So that's Project 4.

NOTE Confidence: 0.36653194

 $00{:}26{:}39.660 \dashrightarrow 00{:}26{:}41.880$ And the Project 4,

NOTE Confidence: 0.36653194

 $00{:}26{:}41.880 \dashrightarrow 00{:}26{:}43.385$ essentially what it tries to

NOTE Confidence: 0.36653194

 $00:26:43.385 \longrightarrow 00:26:45.755$ do is trying to use what we

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

NOTE Confidence: 0.36653194

 $00:26:46.960 \rightarrow 00:26:48.600$ 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

 $00:26:50.767 \rightarrow 00:26:52.720$ but I want to give you the big picture.

NOTE Confidence: 0.36653194

 $00{:}26{:}52{.}720 \dashrightarrow 00{:}26{:}55{.}835$ 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

 $00:26:58.040 \rightarrow 00:27:00.265$ you create reactive oxygen species

NOTE Confidence: 0.36653194

 $00:27:00.265 \longrightarrow 00:27:03.022$ and then the reactive oxygen species

NOTE Confidence: 0.36653194

 $00{:}27{:}03.022 \dashrightarrow 00{:}27{:}05.317$ that can degrade your chemical.

NOTE Confidence: 0.36653194

 $00{:}27{:}05{.}320 \dashrightarrow 00{:}27{:}07{.}896$ And this is also we're trying to do

NOTE Confidence: 0.36653194

 $00{:}27{:}07{.}896 \dashrightarrow 00{:}27{:}09{.}638$ 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

 $00:27:11.400 \longrightarrow 00:27:12.318$ Let's go for

NOTE Confidence: 0.5781793

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

NOTE Confidence: 0.5781793

 $00:27:15.480 \longrightarrow 00:27:17.440$ This is the theme that we have.

NOTE Confidence: 0.5781793

 $00:27:17.440 \longrightarrow 00:27:19.678$ 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
- $00:27:23.084 \longrightarrow 00:27:24.797$ That's her project.
- NOTE Confidence: 0.5781793
- $00{:}27{:}24.800 \dashrightarrow 00{:}27{:}27.201$ 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
- $00{:}27{:}29{.}560 \dashrightarrow 00{:}27{:}31{.}480$ And this is in collaboration
- NOTE Confidence: 0.5781793
- $00:27:31.480 \longrightarrow 00:27:33.016$ with the National Toxicology
- NOTE Confidence: 0.5781793
- 00:27:33.016 --> 00:27:34.759 Program with Stephen Ferguson,
- NOTE Confidence: 0.5781793
- $00{:}27{:}34.760 \dashrightarrow 00{:}27{:}37.940$ who is doing the human
- NOTE Confidence: 0.5781793
- $00{:}27{:}37{.}940 \dashrightarrow 00{:}27{:}41{.}120$ Hepatocytes and also the human,
- NOTE Confidence: 0.5781793
- $00:27:41.120 \longrightarrow 00:27:43.350$ the 3D structures of the of
- NOTE Confidence: 0.5781793
- $00:27:43.350 \longrightarrow 00:27:45.240$ the of the human cells that we
- NOTE Confidence: 0.5781793
- $00{:}27{:}45{.}240 \dashrightarrow 00{:}27{:}47{.}207$ can do the organoids and we
- NOTE Confidence: 0.5781793
- $00{:}27{:}47{.}207 \dashrightarrow 00{:}27{:}49{.}235$ can test 1.4 dioxin in there.
- NOTE Confidence: 0.5781793
- $00{:}27{:}49{.}240 \dashrightarrow 00{:}27{:}51{.}004$ So what we do here at the
- NOTE Confidence: 0.5781793
- $00:27:51.004 \rightarrow 00:27:52.599$ Yale and I'll show you is,
- NOTE Confidence: 0.5781793

 $00:27:52.600 \rightarrow 00:27:54.556$ 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

 $00{:}27{:}55{.}640 \dashrightarrow 00{:}27{:}58{.}340$ National Toxicology Program is helping

NOTE Confidence: 0.5781793

 $00:27:58.340 \longrightarrow 00:28:01.758$ 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

 $00{:}28{:}04{.}920 \dashrightarrow 00{:}28{:}07{.}440$ which I was there 10 days ago,

NOTE Confidence: 0.5781793

 $00:28:07.440 \longrightarrow 00:28:10.734$ they're evaluating our 1.4 dioxin but

NOTE Confidence: 0.5781793

 $00:28:10.734 \rightarrow 00:28:14.003$ most importantly the mixtures with the

NOTE Confidence: 0.5781793

 $00{:}28{:}14.003 \dashrightarrow 00{:}28{:}16.214$ 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

 $00{:}28{:}19{.}230 \dashrightarrow 00{:}28{:}22{.}784$ in mice you need you know about

NOTE Confidence: 0.5781793

 $00{:}28{:}22{.}784 \dashrightarrow 00{:}28{:}26.672$ 20 fold budget and much more

NOTE Confidence: 0.5781793

 $00{:}28{:}26{.}672 \dashrightarrow 00{:}28{:}30{.}200$ time to evaluate that in mice.

NOTE Confidence: 0.5781793

 $00{:}28{:}30{.}200 \dashrightarrow 00{:}28{:}33{.}259$ So zebrafish in an is an amazing

NOTE Confidence: 0.5781793

 $00:28:33.259 \rightarrow 00:28:37.053$ tool and actually his here facility

NOTE Confidence: 0.5781793

 $00{:}28{:}37{.}053 \dashrightarrow 00{:}28{:}39{.}384$ up in Oregon State for the zebra

 $00:28:39.384 \rightarrow 00:28:41.312$ fish screening and especially the

NOTE Confidence: 0.5781793

 $00{:}28{:}41{.}312 \dashrightarrow 00{:}28{:}43{.}317$ exposomic studies is truly a mazing.

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

 $00{:}28{:}49.668 \dashrightarrow 00{:}28{:}53.315$ but we're also doing a lot of stuff

NOTE Confidence: 0.5781793

 $00:28:53.315 \longrightarrow 00:28:55.370$ for behavioral stuff and also

NOTE Confidence: 0.5781793

 $00{:}28{:}55{.}370 \dashrightarrow 00{:}28{:}58{.}368$ for that could have an effect on

NOTE Confidence: 0.5781793

 $00{:}28{:}58{.}368 \dashrightarrow 00{:}29{:}00{.}478$ mental issues of this compound.

NOTE Confidence: 0.5781793

 $00{:}29{:}00{.}480 \dashrightarrow 00{:}29{:}02{.}526$ So what we really know again

NOTE Confidence: 0.5781793

 $00:29:02.526 \rightarrow 00:29:04.559$ this is I'm going to pass,

NOTE Confidence: 0.5781793

 $00{:}29{:}04.560 \dashrightarrow 00{:}29{:}06.716$ I have covered that quite a bit.

NOTE Confidence: 0.5781793

 $00{:}29{:}06{.}720 \dashrightarrow 00{:}29{:}08{.}240$ 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

 $00{:}29{:}10.840 \dashrightarrow 00{:}29{:}13.720$ dioxin is a carcinogen in mice.

 $00:29:13.720 \longrightarrow 00:29:15.556$ We don't know what what is

NOTE Confidence: 0.5781793

 $00{:}29{:}15{.}556 \dashrightarrow 00{:}29{:}17{.}479$ doing and what is going on.

NOTE Confidence: 0.5781793

 $00:29:17.480 \longrightarrow 00:29:19.352$ So what we're doing,

NOTE Confidence: 0.5781793

 $00:29:19.352 \rightarrow 00:29:21.368$ 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

 $00:29:22.888 \longrightarrow 00:29:24.520$ it has been done before,

NOTE Confidence: 0.5781793

 $00:29:24.520 \longrightarrow 00:29:27.072$ but we're trying to use knockout animal

NOTE Confidence: 0.5781793

 $00{:}29{:}27.072 \dashrightarrow 00{:}29{:}30.880$ 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

 $00{:}29{:}34.506 \dashrightarrow 00{:}29{:}37.080$ and I will give you the examples in here.

NOTE Confidence: 0.5781793

 $00:29:37.080 \longrightarrow 00:29:39.978$ But essentially the first part is we're

NOTE Confidence: 0.5781793

 $00{:}29{:}39{.}978 \dashrightarrow 00{:}29{:}43{.}516$ using mice and we do high dose and low dose.

NOTE Confidence: 0.5781793

 $00{:}29{:}43.520 \dashrightarrow 00{:}29{:}45.554$ For the high dose is to get the effect,

NOTE Confidence: 0.5781793

 $00:29:45.560 \rightarrow 00:29:49.480$ low dose is to mimic the human exposures.

NOTE Confidence: 0.5781793

 $00:29:49.480 \longrightarrow 00:29:51.520$ 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
- $00:29:53.274 \rightarrow 00:29:55.959$ we're doing the RNA transcriptome,
- NOTE Confidence: 0.5781793
- $00:29:55.960 \longrightarrow 00:29:58.215$ the metabolomics and also the
- NOTE Confidence: 0.5781793
- $00:29:58.215 \rightarrow 00:30:00.856$ phenotyping of this mice and we
- NOTE Confidence: 0.5781793
- $00:30:00.856 \rightarrow 00:30:03.272$ have quite a bit of data so far.
- NOTE Confidence: 0.5781793
- $00:30:03.280 \longrightarrow 00:30:06.388$ 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
- $00:30:08.720 \dashrightarrow 00:30:10.520$ the metabolomics and you know
- NOTE Confidence: 0.5781793
- $00{:}30{:}10.520 \dashrightarrow 00{:}30{:}11.880$ also the clinical,
- NOTE Confidence: 0.5781793
- $00:30:11.880 \longrightarrow 00:30:12.888$ the not clinical,
- NOTE Confidence: 0.5781793
- $00:30:12.888 \rightarrow 00:30:14.904$ the phenotyping things and we're trying
- NOTE Confidence: 0.5781793
- $00:30:14.904 \rightarrow 00:30:16.916$ to determine the mode of action,
- NOTE Confidence: 0.5781793
- $00{:}30{:}16{.}920 \dashrightarrow 00{:}30{:}19{.}538$ the MOA and also the exposure and
- NOTE Confidence: 0.5781793
- $00:30:19.538 \rightarrow 00:30:21.020$ toxicity biomarkers which we're
- NOTE Confidence: 0.5781793
- $00:30:21.020 \longrightarrow 00:30:23.099$ going to feed the project to when
- NOTE Confidence: 0.5781793
- $00:30:23.099 \rightarrow 00:30:25.158$ they do the exposure analysis.
- NOTE Confidence: 0.5781793

 $00:30:25.160 \longrightarrow 00:30:28.268$ I told you before that we also

NOTE Confidence: 0.5781793

 $00{:}30{:}28.268 \dashrightarrow 00{:}30{:}31.750$ using the the HEPA RG cells with

NOTE Confidence: 0.5781793

 $00{:}30{:}31.750 \dashrightarrow 00{:}30{:}35.958$ NTP and the zebra fish for the AM 3.

NOTE Confidence: 0.5781793

 $00{:}30{:}35{.}960 \dashrightarrow 00{:}30{:}38{.}120$ Here is a little bit of

NOTE Confidence: 0.5123129

 $00{:}30{:}38{.}120 \dashrightarrow 00{:}30{:}40{.}731$ of the what we know and what

NOTE Confidence: 0.5123129

 $00{:}30{:}40{.}731 \dashrightarrow 00{:}30{:}42{.}920$ we're currently know regarding the

NOTE Confidence: 0.5123129

 $00:30:42.920 \longrightarrow 00:30:45.280$ 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

 $00{:}30{:}48{.}320 \dashrightarrow 00{:}30{:}50{.}080$ I want to have your attention to it.

NOTE Confidence: 0.5123129

 $00:30:50.080 \dashrightarrow 00:30:53.240$ It is metabolized by cytochrome P452U1.

NOTE Confidence: 0.5123129

 $00:30:53.240 \longrightarrow 00:30:54.840$ Why this is important?

NOTE Confidence: 0.5123129

 $00:30:54.840 \longrightarrow 00:30:58.593$ Because cytochrome P452U1 is the

NOTE Confidence: 0.5123129

 $00{:}30{:}58{.}593 \dashrightarrow 00{:}31{:}01{.}197$ activator of many carcinogens,

NOTE Confidence: 0.5123129

 $00:31:01.200 \longrightarrow 00:31:05.720$ many what we call precarcinogens to

NOTE Confidence: 0.5123129

 $00{:}31{:}05{.}720 \dashrightarrow 00{:}31{:}07{.}748$ very active intermediates that they can

NOTE Confidence: 0.5123129

 $00:31:07.748 \longrightarrow 00:31:10.160$ cause cancer that can interact with DNA.

- NOTE Confidence: 0.5123129
- $00{:}31{:}10.160 \dashrightarrow 00{:}31{:}12.432$ So as you can see on the right

00:31:12.432 $\operatorname{-->}$ 00:31:14.532 hand side you can see also you

NOTE Confidence: 0.5123129

 $00{:}31{:}14{.}532 \dashrightarrow 00{:}31{:}17{.}280$ have the TCe and the PCE which have

NOTE Confidence: 0.5123129

 $00{:}31{:}17{.}280 \dashrightarrow 00{:}31{:}19{.}710$ 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

 $00:31:21.125 \longrightarrow 00:31:23.935$ I want you to keep that in mind

NOTE Confidence: 0.5123129

 $00:31:23.935 \longrightarrow 00:31:25.875$ because what we have found,

NOTE Confidence: 0.5123129

 $00:31:25.880 \rightarrow 00:31:28.036$ 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

 $00:31:29.840 \longrightarrow 00:31:31.420$ 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

 $00{:}31{:}33{.}400 \dashrightarrow 00{:}31{:}34{.}600$ 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

 $00{:}31{:}36{.}720 \dashrightarrow 00{:}31{:}39{.}499$ but one of the major findings that

NOTE Confidence: 0.5123129

 $00:31:39.499 \longrightarrow 00:31:42.548$ we did and nobody has shown that

 $00:31:42.548 \rightarrow 00:31:46.120$ before is we found that 1.4 dioxane

NOTE Confidence: 0.5123129

 $00:31:46.120 \longrightarrow 00:31:49.760$ 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

 $00:31:55.640 \dashrightarrow 00:31:57.770$ cytochrome P452E1 and trichloroethylene

NOTE Confidence: 0.5123129

 $00{:}31{:}57{.}770 \dashrightarrow 00{:}32{:}00{.}520$ 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

 $00:32:02.758 \longrightarrow 00:32:04.952$ 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

 $00{:}32{:}06{.}931 \dashrightarrow 00{:}32{:}08{.}687$ metabolizing the procarcinosis to

NOTE Confidence: 0.5123129

 $00{:}32{:}08.687 \dashrightarrow 00{:}32{:}11.840$ carcinosis and they can cause liver cancer.

NOTE Confidence: 0.5123129

 $00:32:11.840 \longrightarrow 00:32:13.352$ So in other words,

NOTE Confidence: 0.5123129

 $00:32:13.352 \longrightarrow 00:32:16.284$ it can act as a promoter by

NOTE Confidence: 0.5123129

 $00:32:16.284 \rightarrow 00:32:19.012$ inducing the cytochrome P452E1 in

NOTE Confidence: 0.5123129

 $00:32:19.012 \longrightarrow 00:32:21.257$ 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
- $00:32:23.000 \longrightarrow 00:32:25.424$ We find that there is increased

 $00{:}32{:}25{.}424 \dashrightarrow 00{:}32{:}27{.}476$ oxidative stress as indicated with

NOTE Confidence: 0.5123129

 $00:32:27.476 \longrightarrow 00:32:30.066$ four hydroxynone anal and also with the

NOTE Confidence: 0.5123129

 $00:32:30.066 \rightarrow 00:32:32.092$ increase of the quinone oxidoridactase,

NOTE Confidence: 0.5123129

 $00:32:32.092 \longrightarrow 00:32:35.128$ which is a gene involved in

NOTE Confidence: 0.5123129

 $00:32:35.128 \dashrightarrow 00:32:39.160$ the antioxidant response.

NOTE Confidence: 0.5123129

 $00:32:39.160 \longrightarrow 00:32:42.556$ So I apologize this happens again.

NOTE Confidence: 0.5123129

 $00{:}32{:}42.560 \dashrightarrow 00{:}32{:}45.648$ You know the the image becomes a little

NOTE Confidence: 0.5123129

 $00:32:45.648 \rightarrow 00:32:48.866$ bit but what the highlights of our

NOTE Confidence: 0.5123129

 $00{:}32{:}48.866 \dashrightarrow 00{:}32{:}51.480$ 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

 $00{:}32{:}53.728 \dashrightarrow 00{:}32{:}55.640$ another one that I can show you.

NOTE Confidence: 0.5123129

 $00{:}32{:}55{.}640 \dashrightarrow 00{:}32{:}58{.}403$ But we have find out so far that there

NOTE Confidence: 0.5123129

 $00{:}32{:}58{.}403 \dashrightarrow 00{:}33{:}01{.}030$ is a direct xenotoxic effect for

NOTE Confidence: 0.5123129

 $00:33:01.030 \dashrightarrow 00:33:03.060$ dioxin that includes oxidative stress.

 $00:33:03.060 \rightarrow 00:33:05.376$ 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

 $00:33:08.064 \rightarrow 00:33:11.478$ in the metabolism as we have found by

NOTE Confidence: 0.5123129

 $00:33:11.478 \longrightarrow 00:33:14.597$ 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

 $00{:}33{:}21{.}920 \dashrightarrow 00{:}33{:}25{.}816$ 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

 $00{:}33{:}28.193 \dashrightarrow 00{:}33{:}29.758$ How do we do that?

NOTE Confidence: 0.5123129

 $00{:}33{:}29{.}760 \dashrightarrow 00{:}33{:}33{.}015$ We're using knockouts that they have not

NOTE Confidence: 0.5123129

 $00{:}33{:}33.015 \dashrightarrow 00{:}33{:}36.080$ Cytochrome B451 and we determined that.

NOTE Confidence: 0.5123129

 $00:33:36.080 \longrightarrow 00:33:38.198$ So this is what we're doing.

NOTE Confidence: 0.5123129

 $00{:}33{:}38{.}200 \dashrightarrow 00{:}33{:}41{.}280$ 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

 $00{:}33{:}45{.}036 \dashrightarrow 00{:}33{:}47{.}199$ remember we have the metabolism here.

NOTE Confidence: 0.5123129

 $00:33:47.200 \longrightarrow 00:33:50.049$ As you can see Cytochrome B450 is

 $00:33:50.049 \rightarrow 00:33:52.679$ metabolized the first two animal models,

NOTE Confidence: 0.5123129

 $00:33:52.680 \longrightarrow 00:33:56.677$ the GCLM knock out is a model of

NOTE Confidence: 0.5123129

 $00:33:56.680 \rightarrow 00:33:59.160$ mice that has low glutathione

NOTE Confidence: 0.5123129

 $00:33:59.160 \rightarrow 00:34:01.640$ 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 knock
out model is the Nerf two

NOTE Confidence: 0.5123129

 $00{:}34{:}07{.}088 \dashrightarrow 00{:}34{:}10{.}080$ is a transcription factor involved

NOTE Confidence: 0.27478766

 $00{:}34{:}10{.}080 \dashrightarrow 00{:}34{:}11{.}930$ in all the genes involving

NOTE Confidence: 0.27478766

 $00:34:11.930 \longrightarrow 00:34:13.040$ 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

 $00:34:15.840 \rightarrow 00:34:19.640$ your cell becomes really active.

NOTE Confidence: 0.27478766

 $00{:}34{:}19.640 \dashrightarrow 00{:}34{:}22.377$ Against the insults and we try we

NOTE Confidence: 0.27478766

 $00:34:22.377 \rightarrow 00:34:24.440$ you we're currently using that,

NOTE Confidence: 0.27478766

 $00{:}34{:}24{.}440 \dashrightarrow 00{:}34{:}27{.}120$ we're doing the experiments and to do that.

NOTE Confidence: 0.27478766

 $00:34:27.120 \longrightarrow 00:34:30.130$ So we're also using the cytochrome P4

00:34:30.130 --> 00:34:33.045 phase E2E1 As I said we completed those

NOTE Confidence: 0.27478766

 $00{:}34{:}33.045 \dashrightarrow 00{:}34{:}35.815$ studies actually and we're using the NQ

NOTE Confidence: 0.27478766

 $00:34:35.815 \dashrightarrow 00:34:38.080$ one and also the aldehydehydrogen ase 2.

NOTE Confidence: 0.27478766

 $00{:}34{:}38{.}080 \dashrightarrow 00{:}34{:}41{.}343$ As you can see the Ald H2 could

NOTE Confidence: 0.27478766

 $00{:}34{:}41{.}343 \dashrightarrow 00{:}34{:}42{.}669$ be involved in the last steps

NOTE Confidence: 0.27478766

 $00{:}34{:}42.669 \dashrightarrow 00{:}34{:}44.079$ of the metabolism of that.

NOTE Confidence: 0.27478766

 $00{:}34{:}44{.}080 \dashrightarrow 00{:}34{:}47{.}620$ And you know the Ald H2 is a gene that

NOTE Confidence: 0.27478766

 $00{:}34{:}47{.}720 \dashrightarrow 00{:}34{:}50{.}905$ has it's highly polymorphic in a lot

NOTE Confidence: 0.27478766

 $00{:}34{:}50{.}905 \dashrightarrow 00{:}34{:}56{.}200$ of individuals especially those in from

NOTE Confidence: 0.27478766

 $00{:}34{:}56{.}200 \dashrightarrow 00{:}35{:}00{.}155$ the from Asian population quite a bit.

NOTE Confidence: 0.27478766

 $00{:}35{:}00{.}160 \dashrightarrow 00{:}35{:}02{.}998$ So Project 2 is the exposure

NOTE Confidence: 0.27478766

 $00:35:02.998 \dashrightarrow 00:35:06.419$ assessment team led by Co led by

NOTE Confidence: 0.27478766

 $00{:}35{:}06{.}419 \dashrightarrow 00{:}35{:}08{.}799$ Nicole Diesel and Brian Litter.

NOTE Confidence: 0.27478766

 $00{:}35{:}08{.}800 \dashrightarrow 00{:}35{:}11{.}203$ And we have also most of our people from

NOTE Confidence: 0.27478766

 $00:35:11.203 \rightarrow 00:35:13.479$ our department in exposures Crystal,

NOTE Confidence: 0.27478766

 $00:35:13.480 \longrightarrow 00:35:15.060$ Pollet, Zhai and Lu.

- NOTE Confidence: 0.27478766
- $00{:}35{:}15{.}060 \dashrightarrow 00{:}35{:}17{.}035$ And also we have collaborators

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

 $00:35:22.360 \rightarrow 00:35:25.564$ And this as I told you is going

NOTE Confidence: 0.27478766

 $00:35:25.564 \longrightarrow 00:35:27.074$ to be an exposure model,

NOTE Confidence: 0.27478766

 $00:35:27.080 \rightarrow 00:35:28.848$ exposure assessment model here

NOTE Confidence: 0.27478766

 $00{:}35{:}28{.}848 \dashrightarrow 00{:}35{:}31{.}500$ in Long Island and we have

NOTE Confidence: 0.27478766

 $00:35:31.584 \longrightarrow 00:35:33.680$ 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

 $00:35:36.096 \dashrightarrow 00:35:38.300$ collect the water you collect the

NOTE Confidence: 0.27478766

 $00{:}35{:}38{.}300 \dashrightarrow 00{:}35{:}40{.}580$ 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

 $00:35:45.200 \longrightarrow 00:35:47.192$ the medical records and you're trying NOTE Confidence: 0.862863683666667

 $00{:}35{:}47.192 \dashrightarrow 00{:}35{:}49.301$ to do the exposure assessment and

NOTE Confidence: 0.8628636836666667

 $00{:}35{:}49{.}301 \dashrightarrow 00{:}35{:}51{.}828$ we're trying to interact all this this

00:35:51.828 --> 00:35:54.285 project as I told you as we're using

NOTE Confidence: 0.862863683666667

 $00:35:54.285 \rightarrow 00:35:56.471$ metabolomics in this in this project

NOTE Confidence: 0.862863683666667

 $00{:}35{:}56{.}471 \dashrightarrow 00{:}35{:}59{.}093$ and the metabolomics here will be

NOTE Confidence: 0.862863683666667

 $00:35:59.093 \rightarrow 00:36:01.121$ coordinated with a metabolomics for

NOTE Confidence: 0.862863683666667

 $00:36:01.121 \longrightarrow 00:36:03.816$ the first program which is on the

NOTE Confidence: 0.862863683666667

 $00:36:03.816 \rightarrow 00:36:06.196$ 1st specific aim which is in mice.

NOTE Confidence: 0.8628636836666667

 $00:36:06.200 \longrightarrow 00:36:10.565$ The third project is led by many

NOTE Confidence: 0.862863683666667

 $00{:}36{:}10.565 \dashrightarrow 00{:}36{:}14.700$ Elimelech from the school of the the

NOTE Confidence: 0.862863683666667

 $00{:}36{:}14.700 \dashrightarrow 00{:}36{:}16.700$ Department of Chemical Environmental

NOTE Confidence: 0.8628636836666667

 $00{:}36{:}16.700 \dashrightarrow 00{:}36{:}20.003$ 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

 $00:36:22.560 \longrightarrow 00:36:23.706$ from this group.

NOTE Confidence: 0.8628636836666667

 $00:36:23.706 \longrightarrow 00:36:25.616$ And again what we're they're

NOTE Confidence: 0.862863683666667

 $00:36:25.616 \rightarrow 00:36:28.365$ trying to do is they're trying to

NOTE Confidence: 0.8628636836666667

00:36:28.365 - > 00:36:30.275 develop this kind of molecules,

NOTE Confidence: 0.862863683666667

 $00:36:30.280 \longrightarrow 00:36:33.472$ the eptomers or all this idea that it

- NOTE Confidence: 0.862863683666667
- $00:36:33.472 \longrightarrow 00:36:37.014$ can bind to that and then it can be
- NOTE Confidence: 0.862863683666667
- $00{:}36{:}37{.}014 \dashrightarrow 00{:}36{:}39{.}680$ detected and then they can transmit that.
- NOTE Confidence: 0.862863683666667
- $00:36:39.680 \longrightarrow 00:36:41.186$ 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: 0.8628636836666667
- $00{:}36{:}42.760 \dashrightarrow 00{:}36{:}45.576$ but at least we can develop the sensors
- NOTE Confidence: 0.862863683666667
- $00{:}36{:}45{.}576 \dashrightarrow 00{:}36{:}48{.}233$ to develop and then we can try to find
- NOTE Confidence: 0.862863683666667
- $00:36:48.233 \rightarrow 00:36:50.799$ 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
- $00:36:51.472 \rightarrow 00:36:52.480$ and I apologize,
- NOTE Confidence: 0.862863683666667
- $00:36:52.480 \longrightarrow 00:36:54.168$ I'm trying to give to finish so we
- NOTE Confidence: 0.862863683666667
- $00{:}36{:}54{.}168 \dashrightarrow 00{:}36{:}55{.}880$ can have some time for discussion.
- NOTE Confidence: 0.862863683666667
- $00{:}36{:}55{.}880 \dashrightarrow 00{:}36{:}58{.}344$ 4th project is by Jai Hong Kim
- NOTE Confidence: 0.862863683666667
- $00{:}36{:}58{.}344 \dashrightarrow 00{:}36{:}59{.}400$ and John Faulkner.
- NOTE Confidence: 0.862863683666667
- $00{:}36{:}59{.}400 \dashrightarrow 00{:}37{:}02{.}136$ And as I told you this is relating
- NOTE Confidence: 0.862863683666667
- $00:37:02.136 \longrightarrow 00:37:03.980$ to develop small devices that
- NOTE Confidence: 0.862863683666667

 $00:37:03.980 \longrightarrow 00:37:06.898$ you can use in your house to get

NOTE Confidence: 0.862863683666667

 $00{:}37{:}06{.}898 \dashrightarrow 00{:}37{:}09{.}252$ rid of 1.4 dioxide and they're

NOTE Confidence: 0.862863683666667

 $00:37:09.252 \dashrightarrow 00:37:11.276$ using the advanced oxidation.

NOTE Confidence: 0.862863683666667

 $00:37:11.280 \longrightarrow 00:37:13.440$ It will take me about a lecture to

NOTE Confidence: 0.862863683666667

 $00{:}37{:}13.440 \dashrightarrow 00{:}37{:}15.595$ 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: 0.8628636836666667

 $00{:}37{:}18.032 \dashrightarrow 00{:}37{:}20.087$ peroxide generate hydroxy radical and

NOTE Confidence: 0.862863683666667

 $00:37:20.087 \rightarrow 00:37:22.082$ this hydroxy radical will hit that.

NOTE Confidence: 0.862863683666667

 $00{:}37{:}22.082 \dashrightarrow 00{:}37{:}23.606$ They are using actually two kind

NOTE Confidence: 0.862863683666667

 $00{:}37{:}23.606 \dashrightarrow 00{:}37{:}26.008$ 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: 0.8628636836666667

00:37:29.040 --> 00:37:31.880 some nice some nice things and

NOTE Confidence: 0.8628636836666667

 $00:37:31.880 \longrightarrow 00:37:34.000$ I'm going to tell put there share

NOTE Confidence: 0.862863683666667

 $00:37:34.000 \longrightarrow 00:37:35.440$ some that you can that

NOTE Confidence: 0.30543107

 $00:37:35.440 \longrightarrow 00:37:36.970$ we have made.

NOTE Confidence: 0.30543107

 $00:37:36.970 \rightarrow 00:37:39.520$ We successfully synthesized the catalyst,

- NOTE Confidence: 0.30543107
- $00:37:39.520 \longrightarrow 00:37:41.660$ the boron doped carbon catalyst

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

 $00{:}37{:}47.160 \dashrightarrow 00{:}37{:}49.325$ We quickly discover that maintaining

NOTE Confidence: 0.30543107

 $00{:}37{:}49{.}325 \dashrightarrow 00{:}37{:}51{.}901$ the performance in the real water

NOTE Confidence: 0.30543107

 $00{:}37{:}51{.}901 \dashrightarrow 00{:}37{:}54{.}267$ metrics would be the key for success

NOTE Confidence: 0.30543107

 $00{:}37{:}54.267 \dashrightarrow 00{:}37{:}56.511$ of this research to provide a

NOTE Confidence: 0.30543107

 $00{:}37{:}56{.}511 \dashrightarrow 00{:}37{:}58{.}730$ system that can perform for a long

NOTE Confidence: 0.30543107

 $00{:}37{:}58.799 \dashrightarrow 00{:}38{:}01.159$ period for a household application.

NOTE Confidence: 0.30543107

 $00{:}38{:}01{.}160 \dashrightarrow 00{:}38{:}03{.}902$ We therefore developed a framework on

NOTE Confidence: 0.30543107

 $00{:}38{:}03{.}902 \dashrightarrow 00{:}38{:}07{.}063$ 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

 $00{:}38{:}09{.}555 \dashrightarrow 00{:}38{:}13{.}367$ impurities present in water and in to NOTE Confidence: 0.30543107

 $00:38:13.367 \longrightarrow 00:38:15.839$ improve overall lifetime of the cell.

NOTE Confidence: 0.30543107

 $00{:}38{:}15{.}840 \dashrightarrow 00{:}38{:}18{.}840$ We discovered that optimized pulsing

00:38:18.840 --> 00:38:21.544 sequence enabled improved long term

NOTE Confidence: 0.30543107

NOTE Confidence: 0.30543107

 $00:38:23.648 \longrightarrow 00:38:27.176$ 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

 $00{:}38{:}29{.}096 \dashrightarrow 00{:}38{:}31{.}986$ in the presence of most detrimental

NOTE Confidence: 0.30543107

 $00{:}38{:}31{.}986 \dashrightarrow 00{:}38{:}34{.}800$ impurities such as nickel and zinc.

NOTE Confidence: 0.30543107

 $00{:}38{:}34{.}800 \dashrightarrow 00{:}38{:}37{.}680$ These findings make this cell closer

NOTE Confidence: 0.30543107

 $00{:}38{:}37{.}680 \dashrightarrow 00{:}38{:}40{.}570$ 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

 $00{:}38{:}43{.}960 \dashrightarrow 00{:}38{:}47{.}799$ subsequent one for dioxane destruction.

NOTE Confidence: 0.30543107

 $00{:}38{:}47.800 \dashrightarrow 00{:}38{:}49.516$ Let me share some recent progress.

NOTE Confidence: 0.30543107

 $00{:}38{:}49{.}520 \dashrightarrow 00{:}38{:}51{.}016$ This is the second we have made

NOTE Confidence: 0.30543107

 $00{:}38{:}51{.}016 \dashrightarrow 00{:}38{:}53{.}640$ we successfully synthesized the

NOTE Confidence: 0.2659868

 $00:38:56.440 \rightarrow 00:38:59.000$ I'm sorry it was I thought it was

NOTE Confidence: 0.2659868

 $00{:}38{:}59{.}000 \dashrightarrow 00{:}39{:}01{.}000$ as an. This is the second method

NOTE Confidence: 0.2659868

 $00{:}39{:}01{.}240 \dashrightarrow 00{:}39{:}04{.}036$ destroy one for dioxane in specific

- NOTE Confidence: 0.2659868
- $00:39:04.036 \longrightarrow 00:39:07.450$ aim too we explore the use of

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

 $00{:}39{:}11{.}904 \dashrightarrow 00{:}39{:}15{.}490$ of nano bubbles in solution with a

NOTE Confidence: 0.2659868

 $00:39:15.490 \longrightarrow 00:39:18.115$ focus on hydro thoradical generation

NOTE Confidence: 0.2659868

 $00{:}39{:}18.120 \dashrightarrow 00{:}39{:}21.508$ and by performing a number of different

NOTE Confidence: 0.2659868

 $00:39:21.508 \rightarrow 00:39:24.031$ characterization using degradation of hydro

NOTE Confidence: 0.2659868

 $00:39:24.031 \rightarrow 00:39:26.035$ thoradical specific target compounds,

NOTE Confidence: 0.2659868

 $00:39:26.040 \rightarrow 00:39:28.864$ electron paramagnetic resonance spectroscopy

NOTE Confidence: 0.2659868

 $00:39:28.864 \dashrightarrow 00:39:32.394$ and a fluorescence based indicator.

NOTE Confidence: 0.2659868

 $00:39:32.400 \rightarrow 00:39:34.782$ Through this phase of research we

NOTE Confidence: 0.2659868

 $00{:}39{:}34.782 \dashrightarrow 00{:}39{:}37.826$ concluded that nano bubble induced or hydro

NOTE Confidence: 0.2659868

 $00:39:37.826 \rightarrow 00:39:40.574$ thoradical generation is minimal if not all.

NOTE Confidence: 0.2659868

 $00{:}39{:}40{.}574 \dashrightarrow 00{:}39{:}43{.}079$ But we will continue to study if there

NOTE Confidence: 0.2659868

 $00{:}39{:}43.079 \dashrightarrow 00{:}39{:}45.543$ is an alternative way to enhance the

 $00:39:45.543 \dashrightarrow 00:39:48.278$ 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

 $00:39:57.360 \longrightarrow 00:39:59.278$ that's why I sent my daughter my

NOTE Confidence: 0.329661

 $00:39:59.280 \longrightarrow 00:40:00.760$ daughter's first year in governmental

NOTE Confidence: 0.329661

 $00{:}40{:}00{.}760 \dashrightarrow 00{:}40{:}02{.}680$ engineering in Boulder, Co.

NOTE Confidence: 0.329661

 $00{:}40{:}02{.}680 \dashrightarrow 00{:}40{:}05{.}451$ 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

 $00{:}40{:}06{.}960 \dashrightarrow 00{:}40{:}08{.}808$ which will have Iris,

NOTE Confidence: 0.329661

 $00{:}40{:}08.808 \dashrightarrow 00{:}40{:}11.118$ Kaminski and Andrea and Esposito.

NOTE Confidence: 0.329661

 $00:40:11.120 \longrightarrow 00:40:12.508$ Call it Derry Woods,

NOTE Confidence: 0.329661

 $00{:}40{:}12.508 \dashrightarrow 00{:}40{:}14.243$ 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

 $00:40:18.640 \longrightarrow 00:40:20.720$ big in terms of community

NOTE Confidence: 0.329661

 $00:40:20.720 \rightarrow 00:40:22.800$ engagement and we're doing quite

- NOTE Confidence: 0.329661
- $00:40:22.873 \rightarrow 00:40:25.237$ a bit in in community engagement.

 $00:40:25.240 \rightarrow 00:40:28.168$ We're ready and we utilize community

NOTE Confidence: 0.329661

 $00:40:28.168 \rightarrow 00:40:30.120$ engagement actually to recruit

NOTE Confidence: 0.329661

 $00:40:30.193 \longrightarrow 00:40:32.158$ people for the project too.

NOTE Confidence: 0.329661

 $00:40:32.160 \longrightarrow 00:40:34.758$ This has been fascinating so far,

NOTE Confidence: 0.329661

 $00:40:34.760 \longrightarrow 00:40:37.184$ but we're not staying only in

NOTE Confidence: 0.329661

 $00:40:37.184 \longrightarrow 00:40:39.560$ Log Island or even Vermont.

NOTE Confidence: 0.329661

 $00{:}40{:}39{.}560 \dashrightarrow 00{:}40{:}41{.}840$ We're expanding in other areas too.

NOTE Confidence: 0.329661

 $00{:}40{:}41{.}840 \dashrightarrow 00{:}40{:}44{.}003$ So the other areas that I'm working

NOTE Confidence: 0.329661

 $00{:}40{:}44.003 \dashrightarrow 00{:}40{:}46.422$ right now and I will tell you is

NOTE Confidence: 0.329661

 $00{:}40{:}46{.}422 \dashrightarrow 00{:}40{:}48{.}480$ the New Hampshire in North Carolina,

NOTE Confidence: 0.329661

00:40:48.480 --> 00:40:48.946 Michigan,

NOTE Confidence: 0.329661

 $00:40:48.946 \rightarrow 00:40:52.822$ and recently I have been engaged by Florida.

NOTE Confidence: 0.329661

 $00:40:52.822 \longrightarrow 00:40:54.878$ Believe it or not,

NOTE Confidence: 0.329661

 $00{:}40{:}54.880 \dashrightarrow 00{:}40{:}56.320$ there is an area over there,

- 00:40:56.320 --> 00:40:57.296 Lake Mary,
- NOTE Confidence: 0.329661
- $00:40:57.296 \longrightarrow 00:41:01.016$ that has even 30,000 times higher
- NOTE Confidence: 0.329661
- $00{:}41{:}01.016 \dashrightarrow 00{:}41{:}06.000$ 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
- $00{:}41{:}06{.}353 \dashrightarrow 00{:}41{:}08{.}952$ this is some of the stuff that
- NOTE Confidence: 0.329661
- $00:41:08.952 \rightarrow 00:41:10.935$ we've already done and the publicity
- NOTE Confidence: 0.329661
- $00:41:10.935 \longrightarrow 00:41:12.405$ 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
- $00{:}41{:}15{.}747 \dashrightarrow 00{:}41{:}18{.}319$ using that as a tool and we communicate,
- NOTE Confidence: 0.329661
- $00:41:18.320 \rightarrow 00:41:20.560$ you know, people calling me in the office,
- NOTE Confidence: 0.329661
- $00:41:20.560 \longrightarrow 00:41:22.384$ they said we want to register
- NOTE Confidence: 0.329661
- $00:41:22.384 \rightarrow 00:41:23.920$ for this study and you,
- NOTE Confidence: 0.329661
- $00:41:23.920 \longrightarrow 00:41:25.316$ they need more information.
- NOTE Confidence: 0.329661
- $00:41:25.316 \longrightarrow 00:41:27.410$ And this has not been studying
- NOTE Confidence: 0.329661
- $00:41:27.475 \longrightarrow 00:41:28.679$ only in Long Island.

- NOTE Confidence: 0.329661
- $00{:}41{:}28.680 \dashrightarrow 00{:}41{:}30.852$ And you know, new spapers have taken

 $00:41:30.852 \rightarrow 00:41:33.319$ the centre because of the importance,

NOTE Confidence: 0.329661

 $00:41:33.320 \longrightarrow 00:41:34.280$ as I told you,

NOTE Confidence: 0.329661

 $00:41:34.280 \rightarrow 00:41:36.878$ of 1.4 dioxin discovered in many states.

NOTE Confidence: 0.329661

 $00:41:36.880 \rightarrow 00:41:39.040$ So we're getting a lot training component.

NOTE Confidence: 0.329661

 $00:41:39.040 \longrightarrow 00:41:41.280$ 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

 $00:41:49.490 \longrightarrow 00:41:51.320$ a graduate program at way SPH.

NOTE Confidence: 0.329661

 $00{:}41{:}51{.}320 \dashrightarrow 00{:}41{:}53{.}198$ 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

 $00{:}41{:}56.765 \dashrightarrow 00{:}41{:}58.914$ and you know it had actually the

 $00:41:58.914 \rightarrow 00:42:02.092$ best one of the best scores on the

NOTE Confidence: 0.329661

 $00:42:02.092 \longrightarrow 00:42:05.234$ components they had almost 1012 on

NOTE Confidence: 0.329661

 $00{:}42{:}05{.}234 \dashrightarrow 00{:}42{:}07{.}856$ their application and Yin Chen is

NOTE Confidence: 0.329661

 $00:42:07.856 \dashrightarrow 00:42:10.877$ also part Co investigator on that.

NOTE Confidence: 0.329661

 $00:42:10.880 \longrightarrow 00:42:13.856$ So the way building up training

NOTE Confidence: 0.329661

 $00{:}42{:}13.856 \dashrightarrow 00{:}42{:}18.016$ education capacity going from even NOTE Confidence: 0.329661

 $00{:}42{:}18.016 \dashrightarrow 00{:}42{:}21.270$ under graduates with an R-25 that

NOTE Confidence: 0.329661

 $00{:}42{:}21{.}270 \dashrightarrow 00{:}42{:}23{.}645$ they have on training undergraduate

NOTE Confidence: 0.329661

 $00{:}42{:}23.645 \dashrightarrow 00{:}42{:}26.670$ students to MPH students and also NOTE Confidence: 0.329661

 $00:42:26.670 \rightarrow 00:42:29.440$ PhD students and post doctoral.

NOTE Confidence: 0.329661

 $00{:}42{:}29{.}440 \dashrightarrow 00{:}42{:}32{.}880$ This is classic regular the schedule

NOTE Confidence: 0.329661

 $00{:}42{:}32.880 \dashrightarrow 00{:}42{:}36.720$ we're doing for the training of our PhD.

NOTE Confidence: 0.329661

 $00{:}42{:}36{.}720 \dashrightarrow 00{:}42{:}39{.}240$ Last but not least and I kept the

NOTE Confidence: 0.329661

 $00:42:39.240 \longrightarrow 00:42:41.520$ picture in here of Peter Petuzzi,

NOTE Confidence: 0.329661

 $00:42:41.520 \longrightarrow 00:42:43.180$ although he retired and he

NOTE Confidence: 0.329661

 $00:42:43.180 \longrightarrow 00:42:44.840$ just stepped down right now,

- NOTE Confidence: 0.329661
- $00:42:44.840 \rightarrow 00:42:48.368$ 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
- $00{:}42{:}53{.}153 \dashrightarrow 00{:}42{:}55{.}920$ that they do the data management and
- NOTE Confidence: 0.329661
- $00:42:55.920 \rightarrow 00:42:58.163$ analysis core team which essentially
- NOTE Confidence: 0.329661
- $00{:}42{:}58{.}163 \dashrightarrow 00{:}42{:}59{.}848$ 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
- $00:43:02.680 \rightarrow 00:43:04.840$ 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
- $00:43:07.984 \rightarrow 00:43:11.920$ data sharing and interoperability.
- NOTE Confidence: 0.329661
- $00{:}43{:}11{.}920 \dashrightarrow 00{:}43{:}14{.}237$ So we're trying to develop all this
- NOTE Confidence: 0.329661
- $00{:}43{:}14{.}240 \dashrightarrow 00{:}43{:}17{.}456$ cloud systems and finally and most
- NOTE Confidence: 0.329661
- $00:43:17.456 \rightarrow 00:43:20.560$ importantly is data quality assurance,
- NOTE Confidence: 0.329661
- $00{:}43{:}20{.}560 \dashrightarrow 00{:}43{:}23{.}320$ quality control and data integration.
- NOTE Confidence: 0.55677336
- $00:43:23.320 \longrightarrow 00:43:26.992$ So this is huge and we get really good.
- NOTE Confidence: 0.55677336

 $00{:}43{:}27.000 \dashrightarrow 00{:}43{:}32.716$ So I am almost at my 45 minute mark and

NOTE Confidence: 0.55677336

 $00{:}43{:}32.716 \dashrightarrow 00{:}43{:}35.720$ essentially what I would like to say,

NOTE Confidence: 0.55677336

 $00{:}43{:}35{.}720 \dashrightarrow 00{:}43{:}38{.}624$ the establishment of our Yale Superfan

NOTE Confidence: 0.55677336

 $00{:}43{:}38.624 \dashrightarrow 00{:}43{:}41.873$ 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

 $00{:}43{:}44{.}963 \dashrightarrow 00{:}43{:}47{.}639$ emerging contaminants linked to cancer.

NOTE Confidence: 0.55677336

 $00{:}43{:}47{.}640 \dashrightarrow 00{:}43{:}50{.}712$ Our strategic plan includes the development

NOTE Confidence: 0.55677336

 $00{:}43{:}50.712 \dashrightarrow 00{:}43{:}52.760$ 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

 $00:43:55.320 \longrightarrow 00:43:57.595$ of our initial budget, not only us,

NOTE Confidence: 0.55677336

 $00:43:57.600 \rightarrow 00:44:00.354$ everybody did because they withdrew some NOTE Confidence: 0.55677336

 $00{:}44{:}00{.}354 \dashrightarrow 00{:}44{:}03{.}466$ money from that project to support the

NOTE Confidence: 0.55677336

 $00{:}44{:}03.466 \dashrightarrow 00{:}44{:}06.273$ climate change in a number of institutes.

NOTE Confidence: 0.55677336

 $00{:}44{:}06{.}280 \dashrightarrow 00{:}44{:}08{.}264$ So what we're trying to do is we're

NOTE Confidence: 0.55677336

 $00{:}44{:}08{.}264 \dashrightarrow 00{:}44{:}10{.}175$ trying to develop peripheral research

NOTE Confidence: 0.55677336

 $00:44:10.175 \rightarrow 00:44:12.435$ projects for exposure assessment and

- NOTE Confidence: 0.55677336
- 00:44:12.435 --> 00:44:14.559 various locations across United States,

 $00{:}44{:}14{.}560 \dashrightarrow 00{:}44{:}16{.}279$ fostering international collaboration

NOTE Confidence: 0.55677336

 $00:44:16.279 \rightarrow 00:44:19.792$ and broadening the impact of our work.

NOTE Confidence: 0.55677336

 $00{:}44{:}19.792 \dashrightarrow 00{:}44{:}22.480$ 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

 $00{:}44{:}24{.}840 \dashrightarrow 00{:}44{:}27{.}514$ with the liver center, with diabetes Center,

NOTE Confidence: 0.55677336

 $00:44:27.520 \rightarrow 00:44:30.256$ leveraging their expertise and

NOTE Confidence: 0.55677336

 $00{:}44{:}30{.}256 \dashrightarrow 00{:}44{:}32{.}992$ resources for more comprehensive

NOTE Confidence: 0.55677336

 $00:44:32.992 \longrightarrow 00:44:36.639$ approach to our research in vendors.

NOTE Confidence: 0.55677336

 $00:44:36.640 \longrightarrow 00:44:38.372$ And as we advance,

NOTE Confidence: 0.55677336

 $00{:}44{:}38{.}372 \dashrightarrow 00{:}44{:}42{.}564$ our focus will extend beyond the scope of of

NOTE Confidence: 0.55677336

 $00{:}44{:}42{.}564 \dashrightarrow 00{:}44{:}46{.}358$ the 1.4 dioxin and the volatile compounds.

NOTE Confidence: 0.55677336

 $00:44:46.360 \longrightarrow 00:44:47.344$ And we try,

NOTE Confidence: 0.55677336

 $00{:}44{:}47{.}344 \dashrightarrow 00{:}44{:}50{.}308$ I'm going to try to get more emerging

NOTE Confidence: 0.55677336

 $00:44:50.308 \rightarrow 00:44:54.316$ contaminant with particular emphasis to PFAS.

00:44:54.320 --> 00:44:58.718 And actually PFAS is, you know,

NOTE Confidence: 0.55677336

 $00{:}44{:}58{.}720 \dashrightarrow 00{:}45{:}01{.}600$ because of their ability

NOTE Confidence: 0.55677336

00:45:01.600 - 00:45:04.480 to be endocrine disruptors,

NOTE Confidence: 0.55677336

 $00{:}45{:}04{.}480 \dashrightarrow 00{:}45{:}06{.}745$ they have been linked now

NOTE Confidence: 0.55677336

 $00{:}45{:}06.745 \dashrightarrow 00{:}45{:}08.557$ to obesity and diabetes.

NOTE Confidence: 0.55677336

 $00:45:08.560 \longrightarrow 00:45:10.198$ And as I told you before,

NOTE Confidence: 0.55677336

 $00{:}45{:}10.200 \dashrightarrow 00{:}45{:}11.395$ we find something similar and

NOTE Confidence: 0.55677336

 $00{:}45{:}11.395 \dashrightarrow 00{:}45{:}13.240$ there are a lot of interaction.

NOTE Confidence: 0.55677336

 $00{:}45{:}13.240 \dashrightarrow 00{:}45{:}15.364$ Another thing about PFAS

NOTE Confidence: 0.55677336

00:45:15.364 --> 00:45:17.344 induces kidney cancer, OK,

NOTE Confidence: 0.55677336

 $00:45:17.344 \longrightarrow 00:45:19.264$ it's the major cancer that

NOTE Confidence: 0.55677336

 $00{:}45{:}19{.}264 \dashrightarrow 00{:}45{:}20{.}800$ induces is kidney cancer.

NOTE Confidence: 0.55677336

 $00{:}45{:}20{.}800 \dashrightarrow 00{:}45{:}21{.}624$ So what is the,

NOTE Confidence: 0.55677336

 $00:45:21.624 \longrightarrow 00:45:22.036$ you know,

NOTE Confidence: 0.55677336

 $00:45:22.040 \longrightarrow 00:45:24.116$ the interaction of this between them?

NOTE Confidence: 0.55677336

 $00:45:24.120 \rightarrow 00:45:26.320$ This is something that we need to explore.
$00:45:26.320 \rightarrow 00:45:29.316$ 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

 $00{:}45{:}36{.}502 \dashrightarrow 00{:}45{:}39{.}357$ 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

 $00{:}45{:}41{.}248 \dashrightarrow 00{:}45{:}43.065$ going to take questions and we're

NOTE Confidence: 0.55677336

 $00{:}45{:}43.065 \dashrightarrow 00{:}45{:}44.997$ happy to discuss anything you wish.

NOTE Confidence: 0.317165

 $00{:}45{:}50.640 \dashrightarrow 00{:}45{:}53.360$ Yes, great. Thank you.

NOTE Confidence: 0.317165

 $00:45:53.360 \longrightarrow 00:45:57.640$ I the whole project began

NOTE Confidence: 0.317165

 $00{:}45{:}57.640 \dashrightarrow 00{:}45{:}59.615$ with the involvement of the

NOTE Confidence: 0.317165

 $00{:}45{:}59.615 \dashrightarrow 00{:}46{:}02.240$ community alerting you to 1 dioxide.

NOTE Confidence: 0.317165

 $00:46:02.240 \longrightarrow 00:46:04.680$ So at the Cancer Center,

NOTE Confidence: 0.317165

 $00{:}46{:}04{.}680 \dashrightarrow 00{:}46{:}06{.}240$ liver cancer is a priority.

NOTE Confidence: 0.317165

 $00{:}46{:}06{.}240 \dashrightarrow 00{:}46{:}08{.}724$ Cancer that is in the strategic

 $00:46:08.724 \rightarrow 00:46:11.366$ 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

 $00{:}46{:}15.866 \dashrightarrow 00{:}46{:}17.825$ 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

 $00{:}46{:}20{.}225 \dashrightarrow 00{:}46{:}22{.}346$ clinical aspect 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

 $00:46:24.106 \rightarrow 00:46:25.752$ newly diagnosed with liver cancer.

NOTE Confidence: 0.317165

 $00:46:25.752 \rightarrow 00:46:28.302$ Could there be a case control study NOTE Confidence: 0.317165

 $00{:}46{:}28{.}302 \dashrightarrow 00{:}46{:}30{.}714$ where water is collected from their NOTE Confidence: 0.317165

 $00{:}46{:}30{.}714 \dashrightarrow 00{:}46{:}32{.}184$ home blood question naires and

NOTE Confidence: 0.317165

 $00{:}46{:}32.184 \dashrightarrow 00{:}46{:}33.592$ then have a a controlled sample.

NOTE Confidence: 0.317165

 $00{:}46{:}33{.}592 \dashrightarrow 00{:}46{:}35{.}680$ So there's so much opportunity.

NOTE Confidence: 0.317165

 $00{:}46{:}35{.}680 \dashrightarrow 00{:}46{:}36{.}118$ I think here

NOTE Confidence: 0.3535362

 $00{:}46{:}36{.}640 \dashrightarrow 00{:}46{:}38{.}536$ that's what David said. That's why

NOTE Confidence: 0.3535362

 $00:46:38.536 \rightarrow 00:46:41.039$ he invited me to give the talk here.

- NOTE Confidence: 0.3535362
- $00:46:41.040 \longrightarrow 00:46:42.240$ We need to get this, Melinda,

 $00:46:42.240 \longrightarrow 00:46:44.160$ this is a very good point.

NOTE Confidence: 0.3535362

 $00{:}46{:}44{.}160 \dashrightarrow 00{:}46{:}46{.}536$ If we can get more and actually, you know,

NOTE Confidence: 0.3535362

 $00:46:46.536 \rightarrow 00:46:48.264$ we can explore the possibilities and

NOTE Confidence: 0.3535362

 $00:46:48.264 \rightarrow 00:46:50.679$ if we have more blood samples of that,

NOTE Confidence: 0.3535362

 $00{:}46{:}50.680 \dashrightarrow 00{:}46{:}53.625$ we can do much better, much, much more.

NOTE Confidence: 0.3535362

 $00:46:53.625 \rightarrow 00:46:56.680$ 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

 $00{:}47{:}00{.}760 \dashrightarrow 00{:}47{:}01{.}920$ get your water with you. Is

NOTE Confidence: 0.71345735

 $00{:}47{:}03{.}920 \dashrightarrow 00{:}47{:}05{.}720$ there a safe like what do you recommend?

NOTE Confidence: 0.45874107

 $00{:}47{:}06.680 \dashrightarrow 00{:}47{:}08.912$ 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

 $00:47:11.240 \longrightarrow 00:47:13.440$ 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

 $00:47:14.850 \longrightarrow 00:47:16.440$ there are areas in Long Island,

 $00{:}47{:}16{.}440 \dashrightarrow 00{:}47{:}18{.}856$ there is this interactive map that you can

NOTE Confidence: 0.45874107

 $00{:}47{:}18.856 \dashrightarrow 00{:}47{:}21.117$ 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

 $00{:}47{:}27{.}120 \dashrightarrow 00{:}47{:}28{.}800$ but this public water over

NOTE Confidence: 0.45874107

 $00{:}47{:}28.800 \dashrightarrow 00{:}47{:}30.480$ 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

 $00:47:32.800 \longrightarrow 00:47:34.232$ but it might not be a bad idea

NOTE Confidence: 0.45874107

 $00{:}47{:}34{.}232 \dashrightarrow 00{:}47{:}35{.}558$ to use some bottled water.

NOTE Confidence: 0.25716716

 $00{:}47{:}39{.}160 \dashrightarrow 00{:}47{:}41{.}230$ First of all, I want to echo on you

NOTE Confidence: 0.25716716

 $00{:}47{:}41{.}230 \dashrightarrow 00{:}47{:}43{.}526$ 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

 $00{:}47{:}45.130 \dashrightarrow 00{:}47{:}48.280$ are aligned in many ways with the

NOTE Confidence: 0.25716716

00:47:48.280 --> 00:47:50.728 for theorem Cancer Center strategic plan.

NOTE Confidence: 0.25716716

 $00{:}47{:}50{.}728 \dashrightarrow 00{:}47{:}54{.}368$ I'd like to add to that education because

NOTE Confidence: 0.25716716

 $00:47:54.368 \rightarrow 00:47:57.512$ you have cancer education programs running

- NOTE Confidence: 0.25716716
- $00{:}47{:}57{.}512 \dashrightarrow 00{:}48{:}00{.}255$ that are cancer connected education

 $00{:}48{:}00{.}255 \dashrightarrow 00{:}48{:}02{.}953$ programs running that are complementary

NOTE Confidence: 0.25716716

 $00:48:02.953 \rightarrow 00:48:05.118$ to our other training programs.

NOTE Confidence: 0.25716716

 $00:48:05.120 \rightarrow 00:48:08.684$ The question for you though is you began with

NOTE Confidence: 0.25716716

00:48:08.684 --> 00:48:11.355 a challenge from the state of Connecticut,

NOTE Confidence: 0.25716716

 $00{:}48{:}11{.}360 \dashrightarrow 00{:}48{:}12{.}440$ but I noticed all the

NOTE Confidence: 0.25716716

 $00{:}48{:}12{.}440 \dashrightarrow 00{:}48{:}13{.}800$ collaborations are out of state.

NOTE Confidence: 0.25716716

 $00:48:13.800 \longrightarrow 00:48:16.048$ 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

 $00{:}48{:}22.536 \dashrightarrow 00{:}48{:}26.240$ It's the same thing.

NOTE Confidence: 0.25716716

 $00{:}48{:}26{.}240 \dashrightarrow 00{:}48{:}26{.}640$ There are

NOTE Confidence: 0.30014098

 $00{:}48{:}26.640 \dashrightarrow 00{:}48{:}29.070$ certain areas that they have 1.4

NOTE Confidence: 0.30014098

 $00{:}48{:}29{.}070 \dashrightarrow 00{:}48{:}31{.}920$ dioxane in the state of Connecticut.

NOTE Confidence: 0.30014098

 $00{:}48{:}31{.}920 \dashrightarrow 00{:}48{:}34{.}368$ However, the state of Connecticut has

 $00{:}48{:}34{.}368 \dashrightarrow 00{:}48{:}37{.}539$ taken very good care of the public water

NOTE Confidence: 0.30014098

 $00{:}48{:}37{.}539 \dashrightarrow 00{:}48{:}40{.}160$ 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

 $00:48:43.120 \longrightarrow 00:48:44.518$ they're taking good care how it's

NOTE Confidence: 0.30014098

 $00:48:44.518 \longrightarrow 00:48:46.119$ going to have a major impact.

NOTE Confidence: 0.30014098

 $00{:}48{:}46{.}120 \dashrightarrow 00{:}48{:}47{.}770$ It's going to have a major

NOTE Confidence: 0.30014098

 $00:48:47.770 \longrightarrow 00:48:49.760$ 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

 $00:48:52.160 \longrightarrow 00:48:54.278$ it might not be completely here,

NOTE Confidence: 0.30014098

 $00:48:54.280 \longrightarrow 00:48:59.624$ but it has several aspects of you know,

NOTE Confidence: 0.30014098

 $00:48:59.624 \longrightarrow 00:49:01.040$ getting engaged with

NOTE Confidence: 0.51385456

 $00:49:04.320 \rightarrow 00:49:06.678$ agencies, the state agencies addressing that.

NOTE Confidence: 0.51385456

 $00{:}49{:}06{.}680 \dashrightarrow 00{:}49{:}08{.}717$ And as Melita said, there is an

NOTE Confidence: 0.51385456

 $00{:}49{:}08.717 \dashrightarrow 00{:}49{:}10.598$ increased rate of of liver cancer,

NOTE Confidence: 0.51385456

 $00:49:10.600 \longrightarrow 00:49:12.175$ which brings the other point

NOTE Confidence: 0.51385456

 $00:49:12.175 \longrightarrow 00:49:13.435$ you were talking about.

 $00:49:13.440 \rightarrow 00:49:16.933$ I also have AT32 program with the

NOTE Confidence: 0.51385456

 $00:49:16.933 \rightarrow 00:49:19.600$ 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

 $00:49:22.642 \rightarrow 00:49:26.279$ 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

 $00{:}49{:}28.674 \dashrightarrow 00{:}49{:}31.160$ Conference on Alcohol and Cancer.

NOTE Confidence: 0.51385456

 $00{:}49{:}31{.}160 \dashrightarrow 00{:}49{:}33{.}688$ So this is another area that I think

NOTE Confidence: 0.51385456

 $00{:}49{:}33.688 \dashrightarrow 00{:}49{:}35.402$ the increased levels of alcohol

NOTE Confidence: 0.51385456

 $00{:}49{:}35{.}402 \dashrightarrow 00{:}49{:}38{.}054$ consumption is a very good contributor

NOTE Confidence: 0.51385456

 $00:49:38.054 \longrightarrow 00:49:40.399$ and that along with obesity.

NOTE Confidence: 0.51385456

 $00{:}49{:}40{.}400 \dashrightarrow 00{:}49{:}43{.}288$ 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

 $00:49:46.040 \rightarrow 00:49:48.640$ for for example in the state of Connecticut,

NOTE Confidence: 0.51385456

 $00{:}49{:}48.640 \dashrightarrow 00{:}49{:}51.128$ what we saw in here there is an

NOTE Confidence: 0.51385456

 $00:49:51.128 \rightarrow 00:49:53.816$ increase of the Cytochrome P CN¥452.00.

 $00:49:53.816 \longrightarrow 00:49:57.720$ So if you get get that in combination

NOTE Confidence: 0.51385456

 $00{:}49{:}57.827 \dashrightarrow 00{:}50{:}00.620$ with smoking nitrozamines or other

NOTE Confidence: 0.51385456

 $00{:}50{:}00{.}620 \dashrightarrow 00{:}50{:}03{.}860$ exposures you can increase the rate

NOTE Confidence: 0.51385456

 $00:50:03.860 \longrightarrow 00:50:07.000$ of you know of of cancer in the area,

NOTE Confidence: 0.6351126

 $00{:}50{:}09{.}600 \dashrightarrow 00{:}50{:}10{.}480$ right. Yes,

NOTE Confidence: 0.6351126

 $00:50:15.360 \longrightarrow 00:50:18.496$ well that's a good point.

NOTE Confidence: 0.6351126

 $00:50:18.496 \rightarrow 00:50:22.733$ Listen, we have done a lot of risk evaluation

NOTE Confidence: 0.6351126

 $00{:}50{:}22.733 \dashrightarrow 00{:}50{:}27.317$ risk for water sources in on wells water.

NOTE Confidence: 0.6351126

 $00{:}50{:}27{.}320 \dashrightarrow 00{:}50{:}29{.}511$ I wouldn't say that 1.4 dioxin is

NOTE Confidence: 0.6351126

 $00:50:29.511 \rightarrow 00:50:31.354$ that major concern because we know

NOTE Confidence: 0.6351126

 $00{:}50{:}31{.}354 \dashrightarrow 00{:}50{:}35{.}200$ what the were the areas of 1.4 dioxin.

NOTE Confidence: 0.6351126

 $00:50:35.200 \rightarrow 00:50:38.755$ 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

 $00:50:41.200 \rightarrow 00:50:43.640$ your well water for PFAS,

NOTE Confidence: 0.6351126

 $00:50:43.640 \longrightarrow 00:50:46.767$ that's the only suggestion.

NOTE Confidence: 0.6351126

 $00:50:46.767 \longrightarrow 00:50:48.969$ I don't think in Connecticut we

- NOTE Confidence: 0.6351126
- $00:50:48.969 \rightarrow 00:50:51.600$ have that major issue of 1.4 dioxin.

 $00{:}50{:}59{.}040 \dashrightarrow 00{:}51{:}01{.}272$ 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

 $00:51:03.530 \rightarrow 00:51:05.840$ and it's positive for 1.4 dioxin,

NOTE Confidence: 0.29898286

 $00:51:05.840 \longrightarrow 00:51:09.171$ you don't have to wait for for

NOTE Confidence: 0.29898286

 $00:51:09.171 \longrightarrow 00:51:11.877$ Jihong Kim to develop these devices.

NOTE Confidence: 0.29898286

 $00:51:11.880 \rightarrow 00:51:13.800$ 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

 $00{:}51{:}16.280 \dashrightarrow 00{:}51{:}17.384$ you know, from bottles.

NOTE Confidence: 0.29898286

 $00{:}51{:}17{.}384 \dashrightarrow 00{:}51{:}19{.}428$ Of course you can have some things

NOTE Confidence: 0.29898286

 $00{:}51{:}19{.}428 \dashrightarrow 00{:}51{:}21{.}680$ from there, but it's at least safer.

NOTE Confidence: 0.29898286

 $00:51:21.680 \longrightarrow 00:51:24.160$ If you find that there is P fast,

NOTE Confidence: 0.29898286

 $00:51:24.160 \longrightarrow 00:51:26.176$ the P fast, you can filter them

NOTE Confidence: 0.29898286

 $00{:}51{:}26.176 \dashrightarrow 00{:}51{:}28.038$ with charcoal and stuff like that.

NOTE Confidence: 0.29898286

 $00:51:28.040 \longrightarrow 00:51:30.490$ So there are devices that

 $00:51:30.490 \rightarrow 00:51:31.960$ they're relatively cheap.

NOTE Confidence: 0.29898286

 $00{:}51{:}31{.}960 \dashrightarrow 00{:}51{:}34{.}100$ But one of the things that I want to tell

NOTE Confidence: 0.29898286

 $00{:}51{:}34{.}152 \dashrightarrow 00{:}51{:}36{.}238$ 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

 $00:51:51.080 \rightarrow 00:51:51.880$ you're safe,

NOTE Confidence: 0.45110154

 $00{:}51{:}55{.}080 \dashrightarrow 00{:}51{:}56{.}280$ You cover both of them.

NOTE Confidence: 0.7347072

 $00:51:58.920 \longrightarrow 00:52:00.770$ 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

 $00:52:03.040 \longrightarrow 00:52:05.536$ the Cancer Center is the liver

NOTE Confidence: 0.7347072

 $00{:}52{:}05{.}536 \dashrightarrow 00{:}52{:}08{.}666$ center and also there is a high

NOTE Confidence: 0.7347072

 $00:52:08.666 \rightarrow 00:52:10.976$ incidence of alcohol induced liver

- NOTE Confidence: 0.7347072
- $00:52:10.976 \longrightarrow 00:52:13.140$ cancers and not only the liver

 $00:52:13.140 \longrightarrow 00:52:14.840$ cancer but also colorectal cancers.

NOTE Confidence: 0.7347072

 $00{:}52{:}14.840 \dashrightarrow 00{:}52{:}17.114$ And the incidence of colorectal cancers

NOTE Confidence: 0.7347072

 $00{:}52{:}17.114 \dashrightarrow 00{:}52{:}19.448$ are really high as well throughout

NOTE Confidence: 0.7347072

 $00:52:19.448 \longrightarrow 00:52:22.000$ not only the nation internationally

NOTE Confidence: 0.7347072

 $00:52:22.000 \dashrightarrow 00:52:25.000$ and especially the early onsets.

NOTE Confidence: 0.354462

00:52:31.880 --> 00:52:32.400 Yes,

NOTE Confidence: 0.354462

 $00{:}52{:}34{.}440 \dashrightarrow 00{:}52{:}37{.}448$ I think so. Yes.

NOTE Confidence: 0.354462

 $00{:}52{:}37{.}448 \dashrightarrow 00{:}52{:}39{.}320$ 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

 $00:52:41.480 \longrightarrow 00:52:42.800$ you start from steatosis,

NOTE Confidence: 0.354462

 $00{:}52{:}42{.}800 \dashrightarrow 00{:}52{:}44{.}120$ you go to fibrosis,

NOTE Confidence: 0.354462

 $00:52:44.120 \longrightarrow 00:52:46.316$ you go to cirrhosis and then

NOTE Confidence: 0.354462

 $00:52:46.316 \longrightarrow 00:52:49.067$ some cases you know you go to

NOTE Confidence: 0.354462

 $00{:}52{:}49.067 \dashrightarrow 00{:}52{:}50.679$ a pater cellular carcinoma.

 $00:52:50.680 \longrightarrow 00:52:52.702$ It is possible that you can

NOTE Confidence: 0.354462

 $00{:}52{:}52{.}702 \dashrightarrow 00{:}52{:}53{.}713$ go without cirrhosis.

NOTE Confidence: 0.354462

 $00:52:53.720 \longrightarrow 00:52:57.545$ Yes, I mean in animal models

NOTE Confidence: 0.354462

 $00:52:57.545 \longrightarrow 00:52:59.170$ they go without any any

NOTE Confidence: 0.354462

 $00{:}52{:}59{.}241 \dashrightarrow 00{:}53{:}01{.}036$ 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

 $00{:}53{:}07{.}049 \dashrightarrow 00{:}53{:}08{.}294$ 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

 $00{:}53{:}09{.}560 \dashrightarrow 00{:}53{:}11{.}840$ you know that alcohol,

NOTE Confidence: 0.5598697

 $00:53:11.840 \longrightarrow 00:53:14.720$ it is well known that causes

NOTE Confidence: 0.5598697

 $00:53:14.720 \longrightarrow 00:53:16.028$ liver cirrhosis, right?

NOTE Confidence: 0.5598697

 $00:53:16.028 \dashrightarrow 00:53:19.680$ If you try to do the same thing in mice,

NOTE Confidence: 0.5598697

 $00:53:19.680 \longrightarrow 00:53:21.320$ there is no way you can do it.

NOTE Confidence: 0.5598697

00:53:21.320 $\operatorname{-->}$ 00:53:23.768 But you can take a mouse and you can

NOTE Confidence: 0.5598697

 $00{:}53{:}23.768 \dashrightarrow 00{:}53{:}26.558$ put carbon to trichlorate for 3-4 weeks,

NOTE Confidence: 0.5598697

 $00:53:26.560 \longrightarrow 00:53:28.760$ you'll get cirrhosis 100%.

- NOTE Confidence: 0.5598697
- $00:53:28.760 \longrightarrow 00:53:31.680$ So that's that's the challenges

 $00{:}53{:}31{.}680 \dashrightarrow 00{:}53{:}33{.}840$ that you have between animal models

NOTE Confidence: 0.5598697

 $00{:}53{:}33{.}840 \dashrightarrow 00{:}53{:}36{.}150$ and human thing and that's what we're

NOTE Confidence: 0.5598697

 $00{:}53{:}36{.}150 \dashrightarrow 00{:}53{:}38{.}702$ trying to to do the organoids as a

NOTE Confidence: 0.5598697

 $00:53:38.702 \rightarrow 00:53:40.960$ complementary to to the mouse studies.

NOTE Confidence: 0.33334184

00:53:45.880 --> 00:53:47.998 All right. Thank you very much.