WEBVTT

00:00:00.000 --> 00:00:03.138 Funding for Yale Cancer Answers is

NOTE Confidence: 0.929305264545454

00:00:03.138 --> 00:00:06.120 provided by Smilow Cancer Hospital.

NOTE Confidence: 0.929305264545454

00:00:06.120 --> 00:00:08.320 Welcome to Yale Cancer Answers

NOTE Confidence: 0.929305264545454

00:00:08.320 --> 00:00:10.080 with doctor Anees Chagpar.

NOTE Confidence: 0.929305264545454

00:00:10.080 --> 00:00:12.276 Yale Cancer Answers features the latest

NOTE Confidence: 0.929305264545454

00:00:12.276 --> 00:00:14.516 information on cancer care by welcoming

NOTE Confidence: 0.929305264545454

00:00:14.516 --> 00:00:17.036 oncologists and specialists who are on the

NOTE Confidence: 0.929305264545454

00:00:17.036 --> 00:00:19.118 forefront of the battle to fight cancer.

NOTE Confidence: 0.929305264545454

00:00:19.120 --> 00:00:21.370 This week, it's a conversation about

NOTE Confidence: 0.929305264545454

00:00:21.370 --> 00:00:23.702 research into carcinogens in our drinking

NOTE Confidence: 0.929305264545454

00:00:23.702 --> 00:00:25.637 water with Doctor Vasilis Vasiliou.

NOTE Confidence: 0.929305264545454

00:00:25.640 --> 00:00:27.515 Doctor Vasiliou is department chair

NOTE Confidence: 0.929305264545454

00:00:27.515 --> 00:00:29.836 and Susan Dwight Bliss Professor of

NOTE Confidence: 0.929305264545454

00:00:29.836 --> 00:00:31.360 Epidemiology and Environmental Health

NOTE Confidence: 0.929305264545454

00:00:31.360 --> 00:00:33.999 Sciences at the Yale School of Medicine,

NOTE Confidence: 0.929305264545454

00:00:34.000 --> 00:00:35.820 where Doctor Chagpar is a

NOTE Confidence: 0.929305264545454

00:00:35.820 --> 00:00:37.276 professor of surgical oncology.

NOTE Confidence: 0.959668048666667

00:00:38.280 --> 00:00:40.392 So maybe we can start off by you

NOTE Confidence: 0.959668048666667

00:00:40.392 --> 00:00:42.396 telling us a little bit more about

NOTE Confidence: 0.959668048666667

00:00:42.400 --> 00:00:44.199 yourself and what it is you do.

NOTE Confidence: 0.934027686

00:00:44.480 --> 00:00:48.226 Thank you very much. I'm by training

NOTE Confidence: 0.934027686

00:00:48.226 --> 00:00:52.198 an environmental toxicologist and we're

NOTE Confidence: 0.934027686

00:00:52.200 --> 00:00:55.560 looking for environmentally induced disease,

NOTE Confidence: 0.934027686

00:00:55.560 --> 00:00:58.015 which are conditions essentially caused

NOTE Confidence: 0.934027686

00:00:58.015 --> 00:01:00.704 or triggered by external factors.

NOTE Confidence: 0.934027686

00:01:00.704 --> 00:01:03.544 And this factor could

NOTE Confidence: 0.934027686

00:01:03.544 --> 00:01:05.218 include chemical or natural,

NOTE Confidence: 0.934027686

00:01:05.218 --> 00:01:07.410 as you said, water, biological,

NOTE Confidence: 0.934027686

00:01:07.410 --> 00:01:10.135 physical and psychological

NOTE Confidence: 0.934027686

00:01:10.135 --> 00:01:12.775 events that individuals are exposed

NOTE Confidence: 0.934027686

00:01:12.775 --> 00:01:14.639 to in their surroundings.

NOTE Confidence: 0.934027686

00:01:16.320 --> 00:01:18.035 One of the things that we have,

NOTE Confidence: 0.934027686

00:01:18.040 --> 00:01:19.030 launched is

NOTE Confidence: 0.934027686

00:01:19.030 --> 00:01:21.340 we have been awarded by the National

NOTE Confidence: 0.934027686

00:01:21.407 --> 00:01:23.517 Institute of Environmental Health Sciences

NOTE Confidence: 0.934027686

00:01:23.517 --> 00:01:26.120 to have the Yale Superfund Center,

NOTE Confidence: 0.934027686

00:01:26.120 --> 00:01:28.856 which is focused on what

NOTE Confidence: 0.934027686

00:01:28.856 --> 00:01:31.799 we call emerging contaminants

NOTE Confidence: 0.934027686

00:01:32.776 --> 00:01:35.704 and those are chemicals of concern

NOTE Confidence: 0.934027686

00:01:35.704 --> 00:01:38.797 that are not regulated by the

NOTE Confidence: 0.934027686

00:01:38.797 --> 00:01:41.180 federal or the state government and

NOTE Confidence: 0.934027686

00:01:41.180 --> 00:01:43.560 it could be present in our water.

NOTE Confidence: 0.934027686

00:01:43.560 --> 00:01:46.716 Now there are implications,

NOTE Confidence: 0.934027686

00:01:46.720 --> 00:01:49.024 there are health implications of the

NOTE Confidence: 0.934027686

00:01:49.024 --> 00:01:51.400 presence of these chemicals in our water.

NOTE Confidence: 0.934027686

00:01:51.400 --> 00:01:52.918 And this is what we're studying.

NOTE Confidence: 0.934027686

00:01:52.920 --> 00:01:57.015 We're trying to find if they are

NOTE Confidence: 0.934027686

00:01:57.015 --> 00:01:59.285 indeed causing issues in human health

NOTE Confidence: 0.934027686

00:01:59.285 --> 00:02:02.086 and how we can really mitigate those

NOTE Confidence: 0.934027686

00:02:02.086 --> 00:02:04.716 chemicals from our drinking water.

NOTE Confidence: 0.888607394285714

00:02:06.120 --> 00:02:09.560 That is really concerning.

NOTE Confidence: 0.888607394285714

00:02:09.560 --> 00:02:11.160 I'm sure

NOTE Confidence: 0.888607394285714

00:02:11.160 --> 00:02:14.370 everybody who is listening is very

NOTE Confidence: 0.888607394285714

00:02:14.370 --> 00:02:16.430 concerned about our drinking water.

NOTE Confidence: 0.888607394285714

00:02:16.430 --> 00:02:19.249 We tend to take it for granted

NOTE Confidence: 0.888607394285714

00:02:19.249 --> 00:02:21.600 that living in a first world nation,

NOTE Confidence: 0.888607394285714

00:02:21.600 --> 00:02:24.720 we have clean drinking water that

NOTE Confidence: 0.888607394285714

00:02:24.720 --> 00:02:26.760 certainly would not cause us harm.

NOTE Confidence: 0.888607394285714

00:02:26.760 --> 00:02:29.714 So the concept that there may be

NOTE Confidence: 0.888607394285714

00:02:29.720 --> 00:02:32.954 chemicals that may induce cancer in our

NOTE Confidence: 0.888607394285714

00:02:32.954 --> 00:02:35.517 drinking water is certainly concerning.

NOTE Confidence: 0.888607394285714

00:02:35.517 --> 00:02:38.373 So can you talk a little bit more

NOTE Confidence: 0.888607394285714

00:02:38.373 --> 00:02:40.629 about how you stumbled into this

NOTE Confidence: 0.888607394285714

00:02:40.629 --> 00:02:43.440 research and what you found so far?

NOTE Confidence: 0.888607394285714

00:02:43.440 --> 00:02:47.436 Does the public have a need to be concerned,

NOTE Confidence: 0.888607394285714

00:02:47.440 --> 00:02:49.230 particularly when you say that

NOTE Confidence: 0.888607394285714

00:02:49.230 --> 00:02:51.500 these are not regulated by our

NOTE Confidence: 0.888607394285714

00:02:51.500 --> 00:02:53.156 state or federal governments?

NOTE Confidence: 0.848927245

00:02:53.520 --> 00:02:56.528 Well the one that we are studying

NOTE Confidence: 0.848927245

00:02:56.528 --> 00:02:59.624 is a chemical called 1-4 dioxane,

NOTE Confidence: 0.848927245

00:02:59.624 --> 00:03:02.336 which is used as a stabilizer

NOTE Confidence: 0.848927245

00:03:02.336 --> 00:03:04.485 of other solvents.

NOTE Confidence: 0.848927245

00:03:04.485 --> 00:03:06.560 The problem with this chemical

NOTE Confidence: 0.848927245

00:03:06.560 --> 00:03:08.919 is it cannot be filtered and

NOTE Confidence: 0.848927245

00:03:08.919 --> 00:03:11.664 it's also can be found in our

NOTE Confidence: 0.848927245

00:03:11.664 --> 00:03:14.119 household items such as detergents, shampoos and so on,

00:03:15.440 --> 00:03:18.246 so eventually it'll end up into

NOTE Confidence: 0.848927245

00:03:18.246 --> 00:03:20.276 the water table and eventually

NOTE Confidence: 0.848927245

00:03:20.276 --> 00:03:23.560 can end up in our drinking water.

NOTE Confidence: 0.848927245

00:03:23.560 --> 00:03:26.320 That's the bad news.

NOTE Confidence: 0.848927245

00:03:26.320 --> 00:03:28.606 And the bad news also about

NOTE Confidence: 0.848927245

00:03:28.606 --> 00:03:31.218 this compound is what we call

NOTE Confidence: 0.848927245

00:03:31.218 --> 00:03:33.238 a possible human carcinogen,

NOTE Confidence: 0.848927245

00:03:33.240 --> 00:03:35.136 which means that there are studies

NOTE Confidence: 0.848927245

00:03:35.136 --> 00:03:36.841 in animals that confirm

NOTE Confidence: 0.848927245

00:03:36.841 --> 00:03:38.357 that this is carcinogens.

NOTE Confidence: 0.848927245

00:03:38.360 --> 00:03:38.953 However,

NOTE Confidence: 0.848927245

00:03:38.953 --> 00:03:41.325 there are not epidemiological

NOTE Confidence: 0.848927245

00:03:41.325 --> 00:03:45.120 studies to confirm that this

NOTE Confidence: 0.848927245

00:03:45.120 --> 00:03:47.653 chemical causes cancer in humans.

NOTE Confidence: 0.848927245

00:03:47.653 --> 00:03:49.519 So this is what we're trying

NOTE Confidence: 0.848927245

00:03:49.519 --> 00:03:51.478 to get an answer about.

NOTE Confidence: 0.848927245

00:03:51.480 --> 00:03:54.462 And so we're conducting studies in

NOTE Confidence: 0.848927245

00:03:54.462 --> 00:03:58.021 animal models to find the mechanism by

NOTE Confidence: 0.848927245

00:03:58.021 --> 00:04:00.951 which can cause cancer in the animals.

NOTE Confidence: 0.848927245

00:04:00.951 --> 00:04:03.760 So we can find ways to develop

NOTE Confidence: 0.848927245

00:04:03.760 --> 00:04:06.336 biomarkers for human exposures.

NOTE Confidence: 0.848927245

00:04:06.336 --> 00:04:09.556 And at the same time,

NOTE Confidence: 0.848927245

00:04:09.560 --> 00:04:11.252 especially with our center,

NOTE Confidence: 0.848927245

00:04:11.252 --> 00:04:13.790 we're trying to figure out if

NOTE Confidence: 0.848927245

00:04:13.872 --> 00:04:15.877 people are exposed to this.

NOTE Confidence: 0.848927245

00:04:15.880 --> 00:04:18.372 And for the

NOTE Confidence: 0.848927245

00:04:18.372 --> 00:04:19.440 area of Connecticut,

NOTE Confidence: 0.848927245

00:04:19.440 --> 00:04:20.760 actually we're very good today.

NOTE Confidence: 0.848927245

00:04:20.760 --> 00:04:23.053 We don't have that much of 1-4

NOTE Confidence: 0.848927245

00:04:23.053 --> 00:04:24.918 dioxide in the drinking water.

NOTE Confidence: 0.848927245

00:04:24.920 --> 00:04:27.440 I would say almost nothing.

NOTE Confidence: 0.848927245

00:04:27.440 --> 00:04:27.908 However,

NOTE Confidence: 0.848927245

00:04:27.908 --> 00:04:30.716 there are areas in United States

NOTE Confidence: 0.848927245

00:04:30.716 --> 00:04:33.256 that there are considerable levels

NOTE Confidence: 0.848927245

00:04:33.256 --> 00:04:37.232 of 1-4 dioxin in the drinking water.

NOTE Confidence: 0.848927245

00:04:37.240 --> 00:04:40.042 Now remember that this can

NOTE Confidence: 0.848927245

00:04:40.042 --> 00:04:42.566 be filtered only with expensive

NOTE Confidence: 0.848927245

00:04:42.566 --> 00:04:45.920 settings of what we called reverse

NOTE Confidence: 0.848927245

00:04:45.920 --> 00:04:48.760 osmosis which is really

NOTE Confidence: 0.848927245

00:04:48.760 --> 00:04:50.840 not affordable especially when

NOTE Confidence: 0.848927245

00:04:50.840 --> 00:04:54.120 people have wells and this systems

NOTE Confidence: 0.848927245

00:04:54.120 --> 00:04:57.080 cost between 6 and $10,000.

NOTE Confidence: 0.848927245

00:04:57.080 --> 00:05:01.024 So Long Island, for example, in

NOTE Confidence: 0.848927245

00:05:01.024 --> 00:05:03.867 New York and this an area

NOTE Confidence: 0.848927245

00:05:03.867 --> 00:05:06.315 that they had really high levels

NOTE Confidence: 0.848927245

00:05:06.320 --> 00:05:08.360 1-4 dioxin in their waters.

NOTE Confidence: 0.848927245

00:05:08.360 --> 00:05:08.690 However,

NOTE Confidence: 0.848927245

00:05:08.690 --> 00:05:10.670 with all the efforts and this

NOTE Confidence: 0.848927245

00:05:10.670 --> 00:05:12.880 is why people should

NOTE Confidence: 0.848927245

00:05:12.880 --> 00:05:15.184 be feeling much better with the

NOTE Confidence: 0.848927245

00:05:15.184 --> 00:05:17.316 efforts of the state of New York,

NOTE Confidence: 0.848927245

00:05:17.320 --> 00:05:20.307 they have put big reverse

NOTE Confidence: 0.848927245

00:05:20.307 --> 00:05:22.842 osmosis on municipal wells where

NOTE Confidence: 0.848927245

00:05:22.842 --> 00:05:25.360 the public water comes from.

NOTE Confidence: 0.848927245

00:05:25.360 --> 00:05:28.293 So we have seen that in the last

NOTE Confidence: 0.848927245

00:05:28.293 --> 00:05:30.399 couple of years the water quality

NOTE Confidence: 0.848927245

00:05:30.399 --> 00:05:32.780 in the areas that used to be

NOTE Confidence: 0.848927245

00:05:32.780 --> 00:05:35.776 high levels of 1-4 dioxin is

NOTE Confidence: 0.848927245

00:05:35.776 --> 00:05:37.672 getting clean.

NOTE Confidence: 0.848927245

00:05:37.672 --> 00:05:40.920 But we still have other areas.

NOTE Confidence: 0.848927245

00:05:40.920 --> 00:05:41.660 For example,

NOTE Confidence: 0.848927245

00:05:41.660 --> 00:05:43.880 we have been contacted by Michigan,

NOTE Confidence: 0.848927245

00:05:43.880 --> 00:05:46.120 Ann Arbor,

NOTE Confidence: 0.848927245

00:05:46.120 --> 00:05:48.616 Florida, that they have areas that they still

NOTE Confidence: 0.848927245

00:05:48.616 --> 00:05:50.916 have really high levels of this chemical.

NOTE Confidence: 0.848927245

00:05:50.920 --> 00:05:53.648 Now the other thing I want

NOTE Confidence: 0.848927245

00:05:53.648 --> 00:05:56.768 to tell you is in addition to 1-4 dioxane,

NOTE Confidence: 0.848927245

00:05:56.768 --> 00:05:58.588 there are some other chemicals

NOTE Confidence: 0.848927245

00:05:58.588 --> 00:05:59.680 that everybody knows.

NOTE Confidence: 0.848927245

00:05:59.680 --> 00:06:01.360 You probably have heard

NOTE Confidence: 0.848927245

00:06:01.360 --> 00:06:03.880 of what we call the PFAS,

NOTE Confidence: 0.848927245

00:06:03.880 --> 00:06:06.211 the perfluorinated organic

NOTE Confidence: 0.848927245

00:06:06.211 --> 00:06:09.319 molecules that are present.

NOTE Confidence: 0.848927245

00:06:09.320 --> 00:06:12.395 These are man made chemicals

NOTE Confidence: 0.848927245

00:06:12.395 --> 00:06:14.240 that are

NOTE Confidence: 0.848927245

00:06:14.240 --> 00:06:17.373 present in your Teflon cookware

NOTE Confidence: 0.848927245

00:06:17.373 --> 00:06:21.668 and also on your clothing.

NOTE Confidence: 0.848927245

00:06:21.668 --> 00:06:25.000 And this has existed for many,

NOTE Confidence: 0.848927245

00:06:25.000 --> 00:06:25.760 many years.

NOTE Confidence: 0.848927245

00:06:25.760 --> 00:06:28.040 And the problem with these chemicals

NOTE Confidence: 0.848927245

00:06:28.040 --> 00:06:31.078 is they are very persistent in our body.

NOTE Confidence: 0.848927245

00:06:31.080 --> 00:06:33.400 So once they get to our body,

NOTE Confidence: 0.848927245

00:06:33.400 --> 00:06:36.676 it can be

NOTE Confidence: 0.908502562857143

00:06:36.680 --> 00:06:40.194 very difficult to be removed from our body.

NOTE Confidence: 0.908502562857143

00:06:40.200 --> 00:06:42.850 Actually the monumental thing

NOTE Confidence: 0.908502562857143

00:06:42.850 --> 00:06:47.570 is that about one week ago the EPA,

NOTE Confidence: 0.908502562857143

00:06:47.570 --> 00:06:50.710 the Environmental Protection Agency

NOTE Confidence: 0.908502562857143

00:06:50.710 --> 00:06:54.360 really put the regulatory issues for

NOTE Confidence: 0.908502562857143

00:06:54.360 --> 00:06:56.280 six of these compounds.

NOTE Confidence: 0.908502562857143

00:06:56.280 --> 00:06:58.881 However, the problem is there about 9000 of

NOTE Confidence: 0.908502562857143

00:06:58.881 --> 00:07:01.076 these compounds and this is a major issue.

NOTE Confidence: 0.908502562857143

00:07:01.080 --> 00:07:03.156 So in addition to 1-4 dioxin,

NOTE Confidence: 0.908502562857143

00:07:03.160 --> 00:07:05.266 you have the PFAS where they are

NOTE Confidence: 0.908502562857143

00:07:05.266 --> 00:07:07.480 just starting to be regulated.

NOTE Confidence: 0.908502562857143

00:07:07.480 --> 00:07:10.880 However, the PFAS they're everywhere.

NOTE Confidence: 0.908502562857143

00:07:11.820 --> 00:07:14.640 They are in Connecticut,

NOTE Confidence: 0.908502562857143

00:07:14.640 --> 00:07:16.216 throughout the United States,

NOTE Confidence: 0.908502562857143

00:07:16.216 --> 00:07:18.840 throughout the world.

NOTE Confidence: 0.908502562857143

00:07:18.840 --> 00:07:22.932 And this was because it was

NOTE Confidence: 0.908502562857143

00:07:22.932 --> 00:07:25.508 produced to generate fire resistant

NOTE Confidence: 0.908502562857143

00:07:25.508 --> 00:07:27.640 clothes,

NOTE Confidence: 0.831405036

00:07:29.680 --> 00:07:31.280 cookwares, and stuff like that.

NOTE Confidence: 0.799274333333333

00:07:32.920 --> 00:07:37.524 So just a few questions to kind of go

NOTE Confidence: 0.799274333333333

00:07:37.524 --> 00:07:40.080 over some of the things that you've told us.

NOTE Confidence: 0.799274333333333

00:07:40.080 --> 00:07:45.068 So if these PFAS, we know that

NOTE Confidence: 0.799274333333333

00:07:45.068 --> 00:07:47.079 they are carcinogenic, is that right?

NOTE Confidence: 0.810187672

00:07:47.280 --> 00:07:49.760 Yes, we do.

NOTE Confidence: 0.936347056666667

00:07:50.520 --> 00:07:53.887 And so if they're everywhere and they're

NOTE Confidence: 0.936347056666667

00:07:53.887 --> 00:07:57.157 very difficult to get out of your body,

NOTE Confidence: 0.936347056666667

00:07:57.160 --> 00:08:00.160 do you really think that in the short

NOTE Confidence: 0.936347056666667

00:08:00.160 --> 00:08:03.393 term there will be any impact in terms

NOTE Confidence: 0.936347056666667

00:08:03.393 --> 00:08:05.820 of regulation actually causing a

NOTE Confidence: 0.936347056666667

00:08:05.820 --> 00:08:08.250 reduction in cancer rates that are

NOTE Confidence: 0.936347056666667

00:08:08.328 --> 00:08:10.758 secondary to these PFAS molecules?

NOTE Confidence: 0.936347056666667

00:08:10.760 --> 00:08:14.477 Because, if I was exposed

NOTE Confidence: 0.936347056666667

00:08:14.477 --> 00:08:17.840 to PFAS using Teflon cookware

NOTE Confidence: 0.936347056666667

00:08:17.840 --> 00:08:21.080 in my younger years,

NOTE Confidence: 0.936347056666667

00:08:21.080 --> 00:08:22.840 and it's very difficult to get out of

NOTE Confidence: 0.936347056666667

00:08:22.840 --> 00:08:24.960 the body, is the damage already done?

NOTE Confidence: 0.936347056666667

00:08:24.960 --> 00:08:26.436 I mean, is there any hope?

NOTE Confidence: 0.87734868

00:08:26.720 --> 00:08:29.359 Well, there is plenty of hope actually.

NOTE Confidence: 0.87734868

00:08:29.360 --> 00:08:33.520 Remember that our body

NOTE Confidence: 0.87734868

00:08:33.520 --> 00:08:35.878 has a lot of mechanisms to bypass all

NOTE Confidence: 0.87734868

00:08:35.878 --> 00:08:38.357 these insults, the environmental insults,

NOTE Confidence: 0.87734868

00:08:38.360 --> 00:08:40.376 even at the genetic level, you can

NOTE Confidence: 0.87734868

00:08:40.376 --> 00:08:43.320 have the repair of your DNA and so on.

NOTE Confidence: 0.87734868

00:08:43.320 --> 00:08:45.160 So what we're trying to do, I mean,

NOTE Confidence: 0.87734868

00:08:45.160 --> 00:08:46.840 of course, and it's not only cancer,

NOTE Confidence: 0.87734868

00:08:46.840 --> 00:08:48.568 especially with the PFAS,

NOTE Confidence: 0.87734868

00:08:48.568 --> 00:08:50.250 there are a number of other

NOTE Confidence: 0.87734868

00:08:50.250 --> 00:08:51.840 issues that it could cause.

NOTE Confidence: 0.87734868

00:08:51.840 --> 00:08:55.480 And it's not only your Teflon cookware.

NOTE Confidence: 0.87734868

00:08:55.480 --> 00:08:57.118 It is also in the carpet.

NOTE Confidence: 0.87734868

00:08:57.120 --> 00:08:59.528 It is in the plastic that you put

NOTE Confidence: 0.87734868

00:08:59.528 --> 00:09:04.080 in the water and everything.

NOTE Confidence: 0.87734868

00:09:04.080 --> 00:09:06.320 We know that it causes disease.

NOTE Confidence: 0.87734868

00:09:06.320 --> 00:09:09.272 There's a lot of research going on right now.

NOTE Confidence: 0.87734868

00:09:09.280 --> 00:09:11.716 However, the good news about the PFAS,

NOTE Confidence: 0.87734868

00:09:11.720 --> 00:09:14.195 they can be filtered much

NOTE Confidence: 0.87734868

00:09:14.195 --> 00:09:16.294 easier than the 1-4 dioxane.

NOTE Confidence: 0.87734868

00:09:16.294 --> 00:09:19.202 So there are now a lot of

NOTE Confidence: 0.87734868

00:09:19.202 --> 00:09:21.440 filtering that is going on.

NOTE Confidence: 0.87734868

00:09:21.440 --> 00:09:24.384 But we still have a lot of PFAS

NOTE Confidence: 0.87734868

00:09:24.384 --> 00:09:27.636 in the area and

NOTE Confidence: 0.87734868

00:09:27.640 --> 00:09:29.586 it is the one thing that I

NOTE Confidence: 0.87734868

00:09:29.586 --> 00:09:31.160 would advise is

NOTE Confidence: 0.87734868

00:09:31.160 --> 00:09:32.555 filtering the water especially in

NOTE Confidence: 0.87734868

00:09:32.555 --> 00:09:34.439 the areas that you know have

NOTE Confidence: 0.87734868

00:09:34.440 --> 00:09:36.440 higher levels than

NOTE Confidence: 0.87734868

00:09:36.440 --> 00:09:38.288 what the maximum level

NOTE Confidence: 0.87734868

00:09:38.288 --> 00:09:40.556 recommended to be there.

NOTE Confidence: 0.965383492

00:09:42.040 --> 00:09:45.770 And with regards to the 1.4 dioxane,

NOTE Confidence: 0.965383492

00:09:45.770 --> 00:09:49.640 I mean, although the reverse osmosis

NOTE Confidence: 0.965383492

00:09:49.640 --> 00:09:52.080 equipment technology may be expensive,

NOTE Confidence: 0.965383492

00:09:52.080 --> 00:09:54.040 you mentioned 6 to $10,000,

NOTE Confidence: 0.965383492

00:09:54.040 --> 00:09:56.664 it seems to be a small price to

NOTE Confidence: 0.965383492

00:09:56.664 --> 00:10:00.044 pay if we know that it can

NOTE Confidence: 0.965383492

00:10:00.044 --> 00:10:02.152 eliminate a potential carcinogen.

NOTE Confidence: 0.965383492

00:10:02.160 --> 00:10:05.600 The question really is,

NOTE Confidence: 0.965383492

00:10:05.600 --> 00:10:07.679 do we know that it's a carcinogen?

NOTE Confidence: 0.965383492

00:10:07.680 --> 00:10:08.800 When you talk about,

NOTE Confidence: 0.965383492

00:10:08.800 --> 00:10:10.432 you know, animal studies,

NOTE Confidence: 0.965383492

00:10:10.432 --> 00:10:12.576 have there been epidemiologic

NOTE Confidence: 0.965383492

00:10:12.576 --> 00:10:15.615 studies that look at areas that

NOTE Confidence: 0.965383492

00:10:15.615 --> 00:10:18.134 have high levels of 1.4 dioxane

NOTE Confidence: 0.965383492

00:10:18.134 --> 00:10:20.816 versus low levels to see whether

NOTE Confidence: 0.965383492

00:10:20.816 --> 00:10:23.250 there's a difference in cancer

NOTE Confidence: 0.965383492

00:10:23.250 --> 00:10:25.470 rates according to that to

NOTE Confidence: 0.965383492

00:10:25.470 --> 00:10:28.710 give you at least a signal as to

NOTE Confidence: 0.965383492

00:10:28.710 --> 00:10:30.755 whether this is causing cancers?

NOTE Confidence: 0.9309766925

00:10:31.040 --> 00:10:31.790 Excellent question.

NOTE Confidence: 0.9309766925

00:10:31.790 --> 00:10:34.413 So to answer the first question, no,

NOTE Confidence: 0.9309766925

00:10:34.413 --> 00:10:36.278 there are not epidemiological studies.

NOTE Confidence: 0.9309766925

00:10:36.280 --> 00:10:39.792 This is why the EPA and the International

NOTE Confidence: 0.9309766925

00:10:39.792 --> 00:10:42.200 Agency for Research on Cancer,

NOTE Confidence: 0.9309766925

00:10:42.200 --> 00:10:45.582 they call it a probable human carcinogen.

NOTE Confidence: 0.9309766925

00:10:45.582 --> 00:10:49.420 So our center is funded

NOTE Confidence: 0.9309766925

00:10:49.420 --> 00:10:52.090 in order to identify the molecular

NOTE Confidence: 0.9309766925

00:10:52.173 --> 00:10:54.517 mechanisms of causing cancer.

NOTE Confidence: 0.9309766925

00:10:54.520 --> 00:10:56.314 The 2nd is exactly what you're

NOTE Confidence: 0.9309766925

00:10:56.314 --> 00:10:58.928 saying and the basis of

NOTE Confidence: 0.9309766925

00:10:58.928 --> 00:11:00.613 an epidemiological study is that we

NOTE Confidence: 0.9309766925

00:11:00.613 --> 00:11:02.680 can find people that have

NOTE Confidence: 0.9309766925

00:11:02.680 --> 00:11:04.600 been exposed to 1.4 dioxine.

NOTE Confidence: 0.9309766925

00:11:04.600 --> 00:11:06.476 Then we can look at the history,

NOTE Confidence: 0.9309766925

00:11:06.480 --> 00:11:07.800 we can look at the cancers.

NOTE Confidence: 0.9309766925

00:11:07.800 --> 00:11:10.320 Then we can see if there is any

NOTE Confidence: 0.9309766925

00:11:10.320 --> 00:11:13.316 association for what we're looking for.

NOTE Confidence: 0.9309766925

00:11:13.316 --> 00:11:16.251 If there is any causation relationship

NOTE Confidence: 0.9309766925

00:11:16.251 --> 00:11:19.197 between the exposures and the cancer.

NOTE Confidence: 0.9309766925

00:11:19.200 --> 00:11:22.440 So the other thing that our center is

NOTE Confidence: 0.9309766925

00:11:22.440 --> 00:11:27.280 funded for and as you said $10,000

NOTE Confidence: 0.9309766925

00:11:27.280 --> 00:11:28.560 is a small price.

NOTE Confidence: 0.9309766925

00:11:28.560 --> 00:11:30.815 But remember there are

NOTE Confidence: 0.9309766925

00:11:30.815 --> 00:11:31.717 individual houses.

NOTE Confidence: 0.9309766925

00:11:31.720 --> 00:11:34.000 Now for an individual house to

NOTE Confidence: 0.9309766925

00:11:34.000 --> 00:11:36.536 just get a reverse osmosis for

NOTE Confidence: 0.9309766925

00:11:36.536 --> 00:11:39.200 $10,000 might not be that easy.

NOTE Confidence: 0.9309766925

00:11:39.200 --> 00:11:40.520 So what we're trying to do,

NOTE Confidence: 0.9309766925

00:11:40.520 --> 00:11:42.782 and this is our engineers here

NOTE Confidence: 0.9309766925

00:11:42.782 --> 00:11:45.165 from the school of engineering,

NOTE Confidence: 0.9309766925

00:11:45.165 --> 00:11:47.990 is they were

NOTE Confidence: 0.9309766925

00:11:47.990 --> 00:11:50.850 trying to develop small

NOTE Confidence: 0.9309766925

00:11:50.850 --> 00:11:53.375 devices utilizing what we call

NOTE Confidence: 0.9309766925

00:11:53.375 --> 00:11:55.800 advanced oxidation processes.

NOTE Confidence: 0.9309766925

00:11:55.800 --> 00:12:00.170 And those could be very cheap devices

NOTE Confidence: 0.9309766925

00:12:00.170 --> 00:12:03.880 that can purify individual tap water.

NOTE Confidence: 0.9309766925

00:12:03.880 --> 00:12:06.226 And the other program that we

NOTE Confidence: 0.9309766925

00:12:06.226 --> 00:12:08.789 have also with the our engineers

NOTE Confidence: 0.9309766925

00:12:08.789 --> 00:12:12.030 is to develop sensors that we can

NOTE Confidence: 0.9309766925

00:12:12.130 --> 00:12:14.920 detect the 1.4 dioxin in the water.

NOTE Confidence: 0.966998324444444

00:12:16.480 --> 00:12:19.756 It seems like the other idea,

NOTE Confidence: 0.966998324444444

00:12:19.760 --> 00:12:23.620 which you mentioned as well, is not to put the

NOTE Confidence: 0.966998324444444

00:12:23.620 --> 00:12:26.790 burden of the cost on individual households,

NOTE Confidence: 0.966998324444444

00:12:26.790 --> 00:12:31.339 but rather to manage it at municipal or

NOTE Confidence: 0.966998324444444

00:12:31.339 --> 00:12:35.026 state levels where

NOTE Confidence: 0.966998324444444

00:12:35.026 --> 00:12:39.093 before that water

NOTE Confidence: 0.966998324444444

00:12:39.093 --> 00:12:43.052 gets from the well or the dam or whatever

NOTE Confidence: 0.966998324444444

00:12:43.052 --> 00:12:46.890 to your tap that it goes through some

NOTE Confidence: 0.966998324444444

00:12:46.890 --> 00:12:49.261 reverse osmosis or filtering mechanism.

NOTE Confidence: 0.966998324444444

00:12:49.261 --> 00:12:53.559 So that the water that you get from the tap,

NOTE Confidence: 0.966998324444444

00:12:53.560 --> 00:12:56.556 you can be sure it is safe.

NOTE Confidence: 0.966998324444444

00:12:56.560 --> 00:12:58.793 And so it really is wonderful

NOTE Confidence: 0.966998324444444

00:12:58.793 --> 00:13:01.080 to hear that New York did that.

NOTE Confidence: 0.966998324444444

00:13:01.080 --> 00:13:02.720 And I suppose the other

NOTE Confidence: 0.966998324444444

00:13:02.720 --> 00:13:03.956 study you can do,

NOTE Confidence: 0.966998324444444

00:13:03.960 --> 00:13:06.240 although I suspect it would take more time,

NOTE Confidence: 0.966998324444444

00:13:06.240 --> 00:13:10.326 is to look at those cancer rates before and

NOTE Confidence: 0.966998324444444

00:13:10.326 --> 00:13:13.192 after they implemented that technology.

NOTE Confidence: 0.966998324444444

00:13:13.192 --> 00:13:16.520 Is that something that is being looked at?

NOTE Confidence: 0.966998324444444

00:13:16.520 --> 00:13:17.960 And are other states thinking

NOTE Confidence: 0.966998324444444

00:13:17.960 --> 00:13:19.112 about doing the same?

NOTE Confidence: 0.80639787

00:13:19.120 --> 00:13:22.000 Quite a few, not only for 1.4 dioxin,

NOTE Confidence: 0.80639787

00:13:22.000 --> 00:13:24.012 but also with the PFAS,

NOTE Confidence: 0.80639787

00:13:24.012 --> 00:13:27.850 which is a much, much bigger and

NOTE Confidence: 0.80639787

00:13:27.850 --> 00:13:29.988 broader event throughout the country.

NOTE Confidence: 0.80639787

00:13:29.988 --> 00:13:32.640 And they use a lot of filtration.

NOTE Confidence: 0.80639787

00:13:32.640 --> 00:13:34.002 Now, I have to assure you

NOTE Confidence: 0.80639787

00:13:34.002 --> 00:13:35.280 most of the public water,

NOTE Confidence: 0.80639787

00:13:35.280 --> 00:13:36.760 the dams and everything,

NOTE Confidence: 0.80639787

00:13:36.760 --> 00:13:39.251 they're very well controlled,

NOTE Confidence: 0.80639787

00:13:39.251 --> 00:13:41.273 they're watching them very well.

NOTE Confidence: 0.80639787

00:13:41.280 --> 00:13:43.520 The problem is when there is a

NOTE Confidence: 0.80639787

00:13:43.520 --> 00:13:45.560 big well, like in Long Island,

NOTE Confidence: 0.80639787

00:13:45.560 --> 00:13:48.280 the public water comes from these big wells.

NOTE Confidence: 0.80639787

00:13:48.280 --> 00:13:49.384 And as I said,

NOTE Confidence: 0.80639787

00:13:49.384 --> 00:13:53.600 the state of New York not only installed the

NOTE Confidence: 0.80639787

00:13:53.600 --> 00:13:55.980 reverse osmosis in all these

NOTE Confidence: 0.80639787

00:13:55.980 --> 00:13:58.440 sources of municipal water,

NOTE Confidence: 0.80639787

00:13:58.440 --> 00:14:00.640 but they did something which is very good.

NOTE Confidence: 0.80639787

00:14:00.640 --> 00:14:02.824 And I think more states now are

NOTE Confidence: 0.80639787

00:14:02.824 --> 00:14:05.160 going to follow in this legislation.

NOTE Confidence: 0.80639787

00:14:05.160 --> 00:14:08.040 So what New York did is

NOTE Confidence: 0.80639787

00:14:08.040 --> 00:14:09.440 as I told you before,

NOTE Confidence: 0.80639787

00:14:09.440 --> 00:14:13.400 1-4 dioxin is either a component,

NOTE Confidence: 0.80639787

00:14:13.400 --> 00:14:15.934 or it could be byproduct

NOTE Confidence: 0.80639787

00:14:15.934 --> 00:14:18.998 in a lot of our household items.

NOTE Confidence: 0.80639787

00:14:19.000 --> 00:14:24.530 So the state of New York banned all those

NOTE Confidence: 0.80639787

00:14:24.530 --> 00:14:27.820 household items that do have 1-4 dioxin.

NOTE Confidence: 0.80639787

00:14:27.820 --> 00:14:30.964 So manufacturers now are

NOTE Confidence: 0.80639787

00:14:30.964 --> 00:14:34.912 obliged to have 1-4 dioxane free or

NOTE Confidence: 0.80639787

00:14:34.912 --> 00:14:37.800 generating 1-4 dioxane free products.

NOTE Confidence: 0.80639787

00:14:37.800 --> 00:14:42.380 So by that way you decrease the number of

NOTE Confidence: 0.80639787

00:14:42.380 --> 00:14:46.240 1-4 dioxane that ends up in in your water.

NOTE Confidence: 0.80639787

00:14:46.240 --> 00:14:48.358 And as I told you before,

NOTE Confidence: 0.80639787

00:14:48.360 --> 00:14:50.730 1-4 dioxane could be a discharge

NOTE Confidence: 0.80639787

00:14:50.730 --> 00:14:53.144 of a manufacturing into

NOTE Confidence: 0.80639787

00:14:53.144 --> 00:14:56.000 the river or a lake,

NOTE Confidence: 0.80639787

00:14:56.000 --> 00:14:58.364 but also it can come from

NOTE Confidence: 0.80639787

00:14:58.364 --> 00:15:00.306 our household items.

00:15:01.560 --> 00:15:03.808 Well, we are going to take a short

NOTE Confidence: 0.882116662

00:15:03.808 --> 00:15:05.957 break right now for a medical minute,

NOTE Confidence: 0.882116662

00:15:05.960 --> 00:15:08.319 but please stay tuned to learn more

NOTE Confidence: 0.882116662

00:15:08.319 --> 00:15:10.113 about cancer causing carcinogens in

NOTE Confidence: 0.882116662

00:15:10.113 --> 00:15:12.279 our drinking water with my guest,

NOTE Confidence: 0.882116662

00:15:12.280 --> 00:15:13.960 doctor Vasilis Vasiliou.

NOTE Confidence: 0.86050032

00:15:14.600 --> 00:15:16.904 Support for Yale Cancer Answers comes

NOTE Confidence: 0.86050032

00:15:16.904 --> 00:15:18.903 from Smilow Cancer Hospital where

NOTE Confidence: 0.86050032

00:15:18.903 --> 00:15:20.883 their Prostate and Urologic Cancers

NOTE Confidence: 0.86050032

00:15:20.883 --> 00:15:23.410 Program provides a multispecialty team

NOTE Confidence: 0.86050032

00:15:23.410 --> 00:15:25.600 dedicated to managing the diagnosis,

NOTE Confidence: 0.86050032

00:15:25.600 --> 00:15:28.198 evaluation, and treatment of bladder cancer.

00:15:32.640 --> 00:15:34.740 The American Cancer Society

NOTE Confidence: 0.9213542

00:15:34.740 --> 00:15:37.084 estimates that nearly 150,000 people

NOTE Confidence: 0.9213542

00:15:37.084 --> 00:15:39.758 in the US will be diagnosed with

NOTE Confidence: 0.9213542

00:15:39.758 --> 00:15:41.717 colorectal cancer this year alone.

NOTE Confidence: 0.9213542

00:15:41.720 --> 00:15:42.928 When detected early,

NOTE Confidence: 0.9213542

00:15:42.928 --> 00:15:44.720 colorectal cancer is easily

NOTE Confidence: 0.9213542

00:15:44.720 --> 00:15:46.512 treated and highly curable,

NOTE Confidence: 0.9213542

00:15:46.520 --> 00:15:48.860 and men and women over the age of 45

NOTE Confidence: 0.9213542

00:15:48.860 --> 00:15:50.390 should have regular colonoscopies

NOTE Confidence: 0.9213542

00:15:50.390 --> 00:15:52.395 to screen for the disease.

NOTE Confidence: 0.9213542

00:15:52.400 --> 00:15:54.355 Patients with colorectal cancer have

NOTE Confidence: 0.9213542

00:15:54.355 --> 00:15:56.808 more hope than ever before thanks

NOTE Confidence: 0.9213542

00:15:56.808 --> 00:15:58.978 to increased access to advanced

NOTE Confidence: 0.9213542

00:15:58.978 --> 00:16:00.714 therapies and specialized care.

NOTE Confidence: 0.9213542

00:16:00.720 --> 00:16:02.728 Clinical trials are currently

NOTE Confidence: 0.9213542

00:16:02.728 --> 00:16:04.736 underway at federally designated

NOTE Confidence: 0.9213542

00:16:04.736 --> 00:16:06.463 comprehensive cancer centers such

NOTE Confidence: 0.9213542

00:16:06.463 --> 00:16:08.752 as Yale Cancer Center and Smilow

NOTE Confidence: 0.9213542

00:16:08.752 --> 00:16:10.890 Cancer Hospital to test innovative

NOTE Confidence: 0.9213542

00:16:10.890 --> 00:16:13.075 new treatments for colorectal cancer.

NOTE Confidence: 0.9213542

00:16:13.080 --> 00:16:15.948 Tumor gene analysis has helped improve

NOTE Confidence: 0.9213542

00:16:15.948 --> 00:16:17.860 management of colorectal cancer

NOTE Confidence: 0.9213542

00:16:17.930 --> 00:16:20.040 by identifying the patient's most

NOTE Confidence: 0.9213542

00:16:20.040 --> 00:16:22.240 likely to benefit from chemotherapy

NOTE Confidence: 0.9213542

00:16:22.240 --> 00:16:24.080 and newer targeted agents,

NOTE Confidence: 0.9213542

00:16:24.080 --> 00:16:26.918 resulting in more patient specific treatment.

NOTE Confidence: 0.9213542

00:16:26.920 --> 00:16:29.320 More information is available

NOTE Confidence: 0.9213542

00:16:29.320 --> 00:16:30.354 at yalecancercenter.org.

NOTE Confidence: 0.9213542

00:16:30.354 --> 00:16:32.958 You're listening to Connecticut Public Radio.

NOTE Confidence: 0.943015106666667

00:16:33.680 --> 00:16:35.798 Welcome back to Yale Cancer Answers.

NOTE Confidence: 0.943015106666667

00:16:35.800 --> 00:16:37.666 This is Doctor Anees Chagpar and

NOTE Confidence: 0.943015106666667

00:16:37.666 --> 00:16:39.480 I'm joined tonight by my guest,

NOTE Confidence: 0.943015106666667

00:16:39.480 --> 00:16:40.866 Doctor Vasilis Vasiliou.

NOTE Confidence: 0.943015106666667

00:16:40.866 --> 00:16:43.176 We're talking about cancer causing

NOTE Confidence: 0.943015106666667

00:16:43.176 --> 00:16:45.623 carcinogens in our drinking water and

NOTE Confidence: 0.943015106666667

00:16:45.623 --> 00:16:47.430 right before the break,

NOTE Confidence: 0.943015106666667

00:16:47.430 --> 00:16:49.530 you had mentioned that New York

NOTE Confidence: 0.943015106666667

00:16:49.530 --> 00:16:51.553 State is actually doing a few

NOTE Confidence: 0.943015106666667

00:16:51.553 --> 00:16:53.371 things that are quite innovative to

NOTE Confidence: 0.943015106666667

00:16:53.371 --> 00:16:55.762 try to reduce the burden of these

NOTE Confidence: 0.943015106666667

00:16:55.762 --> 00:16:57.765 carcinogens in our drinking water.

NOTE Confidence: 0.943015106666667

00:16:57.765 --> 00:17:01.635 One was to establish reverse osmosis

NOTE Confidence: 0.943015106666667

00:17:01.635 --> 00:17:05.838 kind of at the source so that

NOTE Confidence: 0.943015106666667

00:17:05.840 --> 00:17:07.620 individual households don't need

NOTE Confidence: 0.943015106666667

00:17:07.620 --> 00:17:10.082 to worry about installing reverse

NOTE Confidence: 0.943015106666667

00:17:10.082 --> 00:17:12.887 osmosis machinery because the water

NOTE Confidence: 0.943015106666667

00:17:12.887 --> 00:17:16.320 has already gone through that process.

NOTE Confidence: 0.943015106666667

00:17:16.320 --> 00:17:19.020 But the second that you mentioned

NOTE Confidence: 0.943015106666667

00:17:19.020 --> 00:17:22.672 was banning some of the chemicals

NOTE Confidence: 0.943015106666667

00:17:22.672 --> 00:17:24.503 that actually caused these.

NOTE Confidence: 0.943015106666667

00:17:24.503 --> 00:17:26.789 So you had mentioned earlier that

NOTE Confidence: 0.943015106666667

00:17:26.789 --> 00:17:29.195 these may be found in household items,

NOTE Confidence: 0.943015106666667

00:17:29.200 --> 00:17:31.084 detergents, shampoos, etcetera.

NOTE Confidence: 0.943015106666667

00:17:31.084 --> 00:17:35.288 So if we reduce the burden of these

NOTE Confidence: 0.943015106666667

00:17:35.288 --> 00:17:37.398 chemicals in these household items,

NOTE Confidence: 0.943015106666667

00:17:37.400 --> 00:17:40.590 then less of it gets into the wastewater,

NOTE Confidence: 0.943015106666667

00:17:40.590 --> 00:17:42.795 less of it gets into the rivers,

NOTE Confidence: 0.943015106666667

00:17:42.800 --> 00:17:45.584 less of it actually ends up getting back

NOTE Confidence: 0.943015106666667

00:17:45.584 --> 00:17:48.560 to us in the form of our tap water.

NOTE Confidence: 0.943015106666667

00:17:48.560 --> 00:17:52.112 The question that I have for you,

NOTE Confidence: 0.943015106666667

00:17:52.112 --> 00:17:54.877 it's great New York is doing this,

NOTE Confidence: 0.943015106666667

00:17:54.880 --> 00:17:57.160 but we have a global economy,

NOTE Confidence: 0.943015106666667

00:17:57.160 --> 00:18:00.156 certainly a national economy where you know,

NOTE Confidence: 0.943015106666667

00:18:00.160 --> 00:18:02.392 you can buy things in Connecticut

NOTE Confidence: 0.943015106666667

00:18:02.392 --> 00:18:05.397 and live in New York or vice versa.

NOTE Confidence: 0.943015106666667

00:18:05.400 --> 00:18:08.280 So how effective is that going to be?

NOTE Confidence: 0.943015106666667

00:18:08.280 --> 00:18:10.775 And is this really something

NOTE Confidence: 0.943015106666667

00:18:10.775 --> 00:18:14.120 that should be a federal mandate,

NOTE Confidence: 0.943015106666667

00:18:14.120 --> 00:18:16.248 perhaps even a global mandate if we're

NOTE Confidence: 0.943015106666667

00:18:16.248 --> 00:18:18.528 going to get particular about it in

NOTE Confidence: 0.943015106666667

00:18:18.528 --> 00:18:20.958 terms of really having an effect on

NOTE Confidence: 0.943015106666667

00:18:20.958 --> 00:18:23.358 reducing these chemicals in the environment?

NOTE Confidence: 0.970388751666667

00:18:24.040 --> 00:18:26.100 That is a very good question, but

NOTE Confidence: 0.970388751666667

00:18:26.100 --> 00:18:28.680 I would say it's very difficult

NOTE Confidence: 0.970388751666667

00:18:28.680 --> 00:18:30.840 to address that because when

NOTE Confidence: 0.970388751666667

00:18:30.840 --> 00:18:33.862 you start talking for economical impacts

NOTE Confidence: 0.970388751666667

00:18:33.862 --> 00:18:36.598 and stuff like that is very difficult to

NOTE Confidence: 0.970388751666667

00:18:36.598 --> 00:18:39.040 regulate for different countries and so on.

NOTE Confidence: 0.970388751666667

00:18:39.040 --> 00:18:43.760 But I think many states are trying to

NOTE Confidence: 0.970388751666667

00:18:43.760 --> 00:18:45.720 mimic what New York State did,

NOTE Confidence: 0.970388751666667

00:18:45.720 --> 00:18:48.308 especially in the case of 1.4 dioxin.

NOTE Confidence: 0.970388751666667

00:18:48.308 --> 00:18:50.478 Also many of the states,

NOTE Confidence: 0.970388751666667

00:18:50.480 --> 00:18:52.484 at least in United States and

NOTE Confidence: 0.970388751666667

00:18:52.484 --> 00:18:54.879 actually maybeall over the world,

NOTE Confidence: 0.970388751666667

00:18:54.880 --> 00:18:57.520 they're very concerned about the PFAS.

NOTE Confidence: 0.970388751666667

00:18:57.520 --> 00:18:59.725 But there are some other chemicals

NOTE Confidence: 0.970388751666667

00:18:59.725 --> 00:19:01.941 that might be present in our water

NOTE Confidence: 0.970388751666667

00:19:01.941 --> 00:19:03.759 that could be of concern.

NOTE Confidence: 0.970388751666667

00:19:03.760 --> 00:19:06.580 And those are what we call

NOTE Confidence: 0.970388751666667

00:19:06.580 --> 00:19:07.520 the trichloromethanes

NOTE Confidence: 0.970388751666667

00:19:07.520 --> 00:19:09.900 which are formed as a byproduct of

NOTE Confidence: 0.970388751666667

00:19:09.900 --> 00:19:11.903 chlorine we use for disinfection

NOTE Confidence: 0.970388751666667

00:19:11.903 --> 00:19:13.719 to disinfect the water.

NOTE Confidence: 0.970388751666667

00:19:13.720 --> 00:19:16.045 And when chlorine reacts

NOTE Confidence: 0.970388751666667

00:19:16.045 --> 00:19:17.440 with organic matter,

NOTE Confidence: 0.970388751666667

00:19:17.440 --> 00:19:21.040 it creates a strike and trichloromethanes

NOTE Confidence: 0.970388751666667

00:19:21.040 --> 00:19:24.240 have been associated with

NOTE Confidence: 0.970388751666667

00:19:24.240 --> 00:19:26.708 increase risk of bladder cancer

NOTE Confidence: 0.970388751666667

00:19:26.708 --> 00:19:28.993 and possibly with colon cancer.

NOTE Confidence: 0.970388751666667

00:19:29.000 --> 00:19:30.492 In addition to that,

NOTE Confidence: 0.970388751666667

00:19:30.492 --> 00:19:32.730 remember that we also have arsenic

NOTE Confidence: 0.970388751666667

00:19:32.805 --> 00:19:34.637 contamination of the water.

NOTE Confidence: 0.970388751666667

00:19:34.640 --> 00:19:36.944 Now arsenic

00:19:38.465 --> 00:19:40.355 could be an environmental pollutant,

NOTE Confidence: 0.970388751666667

00:19:40.360 --> 00:19:43.600 but also it occurs naturally in some areas

NOTE Confidence: 0.970388751666667

00:19:43.600 --> 00:19:47.520 and it may contaminate the groundwater.

NOTE Confidence: 0.970388751666667

00:19:47.520 --> 00:19:51.840 So it is very important to monitor our water.

NOTE Confidence: 0.970388751666667

00:20:00.280 --> 00:20:01.576 Municipals are doing that.

NOTE Confidence: 0.970388751666667

00:20:01.576 --> 00:20:02.872 They're checking the quality

NOTE Confidence: 0.970388751666667

00:20:02.872 --> 00:20:04.336 of the drinking water.

NOTE Confidence: 0.970388751666667

00:20:04.336 --> 00:20:07.600 So they are protecting the people there.

NOTE Confidence: 0.970388751666667

00:20:07.600 --> 00:20:11.040 Now for the PFAS it starts to become federal

NOTE Confidence: 0.970388751666667

00:20:11.040 --> 00:20:13.356 law that there have to be limits on that.

NOTE Confidence: 0.970388751666667

00:20:13.360 --> 00:20:15.322 So they're going to follow on

NOTE Confidence: 0.970388751666667

00:20:15.322 --> 00:20:17.000 that particular limit as well.

NOTE Confidence: 0.970388751666667

00:20:17.000 --> 00:20:20.438 So reducing the exposure is 1,

NOTE Confidence: 0.970388751666667

00:20:20.440 --> 00:20:22.918 detecting the exposure is a second,

NOTE Confidence: 0.970388751666667

00:20:22.920 --> 00:20:25.425 and also mitigating the contaminants

NOTE Confidence: 0.970388751666667

00:20:25.425 --> 00:20:28.844 from our drinking water is the third.

NOTE Confidence: 0.970388751666667

00:20:28.844 --> 00:20:31.600 That's what everybody is trying to do.

NOTE Confidence: 0.970388751666667

00:20:31.600 --> 00:20:33.696 And I think we're going to have

NOTE Confidence: 0.970388751666667

00:20:33.696 --> 00:20:35.683 success and this is how we're going

NOTE Confidence: 0.970388751666667

00:20:35.683 --> 00:20:37.640 to promote a better well-being.

NOTE Confidence: 0.90034969

00:20:38.840 --> 00:20:41.126 The question that

NOTE Confidence: 0.90034969

00:20:41.126 --> 00:20:44.416 I have is for each of those three

NOTE Confidence: 0.90034969

00:20:44.416 --> 00:20:46.820 things is the responsibility,

NOTE Confidence: 0.90034969

00:20:46.820 --> 00:20:50.048 does that rest primarily with

NOTE Confidence: 0.90034969

00:20:50.048 --> 00:20:52.560 the individual household or with

NOTE Confidence: 0.90034969

00:20:52.560 --> 00:20:54.160 the state or federal government?

NOTE Confidence: 0.90034969

00:20:54.160 --> 00:20:58.354 In other words, should I be in my home,

NOTE Confidence: 0.90034969

00:20:58.360 --> 00:21:01.943 you know, testing my water and

NOTE Confidence: 0.90034969

00:21:01.943 --> 00:21:04.658 should I be installing filters

NOTE Confidence: 0.90034969

00:21:04.658 --> 00:21:07.480 and or drinking filtered water?

NOTE Confidence: 0.90034969

00:21:07.480 --> 00:21:09.460 I mean, there's a whole issue

NOTE Confidence: 0.90034969

00:21:09.460 --> 00:21:11.695 about bottled water and the plastic

NOTE Confidence: 0.90034969

00:21:11.695 --> 00:21:13.395 contaminants that that causes.

NOTE Confidence: 0.90034969

00:21:13.400 --> 00:21:15.906 Or is this really something that should

NOTE Confidence: 0.90034969

00:21:15.906 --> 00:21:18.958 be at the state or federal level,

NOTE Confidence: 0.90034969

00:21:18.960 --> 00:21:22.272 or municipality level even where the

NOTE Confidence: 0.90034969

00:21:22.272 --> 00:21:25.445 government will assure the quality

NOTE Confidence: 0.90034969

00:21:25.445 --> 00:21:29.040 of the water, they'll do the testing,

NOTE Confidence: 0.90034969

00:21:29.040 --> 00:21:31.736 they'll do the filtering, etcetera.

NOTE Confidence: 0.90034969

00:21:31.736 --> 00:21:33.400 So that

NOTE Confidence: 0.90034969

00:21:33.400 --> 00:21:35.283 I can know that the water that's

NOTE Confidence: 0.90034969

00:21:35.283 --> 00:21:37.558 coming out of my tap is safe to drink.

NOTE Confidence: 0.90034969

00:21:37.560 --> 00:21:39.450 And shouldn't that be part of

NOTE Confidence: 0.90034969

00:21:39.450 --> 00:21:41.480 what we all pay taxes for?

NOTE Confidence: 0.799278166666667

00:21:41.760 --> 00:21:44.063 It is, and you're

NOTE Confidence: 0.799278166666667

00:21:44.063 --> 00:21:46.040 talking about the public water.

NOTE Confidence: 0.799278166666667

00:21:46.040 --> 00:21:49.040 So yes, municipal, state and everything.

NOTE Confidence: 0.799278166666667

00:21:49.040 --> 00:21:51.320 They're responsible for checking the water,

NOTE Confidence: 0.799278166666667

00:21:51.320 --> 00:21:52.530 for cleaning the water and

NOTE Confidence: 0.799278166666667

00:21:52.530 --> 00:21:54.119 they're doing a very good job to

NOTE Confidence: 0.799278166666667

00:21:54.120 --> 00:21:56.916 the extent that they can.

NOTE Confidence: 0.799278166666667

00:21:56.920 --> 00:21:59.195 Now the problem is with private wells.

NOTE Confidence: 0.799278166666667

00:21:59.200 --> 00:22:00.796 In private wells, as you know,

NOTE Confidence: 0.799278166666667

00:22:00.800 --> 00:22:05.108 they're not under federal regulations,

NOTE Confidence: 0.799278166666667

00:22:05.108 --> 00:22:07.478 they're not under state regulations.

NOTE Confidence: 0.799278166666667

00:22:07.480 --> 00:22:10.548 So it's up to the people that they have their

NOTE Confidence: 0.799278166666667

00:22:10.548 --> 00:22:13.080 private wells to check their water level.

NOTE Confidence: 0.799278166666667

00:22:13.080 --> 00:22:13.899 And for example,

NOTE Confidence: 0.799278166666667

00:22:13.899 --> 00:22:16.204 I can tell you some of the houses

NOTE Confidence: 0.799278166666667

00:22:16.204 --> 00:22:18.148 that we have in Madison

NOTE Confidence: 0.799278166666667

00:22:18.148 --> 00:22:20.080 that might have radon also

NOTE Confidence: 0.799278166666667

00:22:20.080 --> 00:22:23.195 in their drinking water, or uranium,

NOTE Confidence: 0.799278166666667

00:22:23.200 --> 00:22:24.652 it's naturally occurring things.

NOTE Confidence: 0.799278166666667

00:22:24.652 --> 00:22:27.745 So it is up to the individuals that

NOTE Confidence: 0.799278166666667

00:22:27.745 --> 00:22:30.265 they have the households

NOTE Confidence: 0.799278166666667

00:22:30.265 --> 00:22:32.959 that they have the private wells checked.

00:22:38.360 --> 00:22:40.968 So that at least makes me feel

NOTE Confidence: 0.955318601304348

00:22:40.968 --> 00:22:44.280 better in the sense that those who do get

NOTE Confidence: 0.955318601304348

00:22:44.280 --> 00:22:46.879 their drinking water from public sources,

NOTE Confidence: 0.955318601304348

00:22:46.880 --> 00:22:49.106 what you're telling me is essentially that

NOTE Confidence: 0.955318601304348

00:22:49.106 --> 00:22:52.040 if you get your water from a public source,

NOTE Confidence: 0.955318601304348

00:22:52.040 --> 00:22:54.637 you should be safe from these carcinogens.

NOTE Confidence: 0.955318601304348

00:22:54.640 --> 00:22:57.184 And that really the word to the wise

NOTE Confidence: 0.955318601304348

00:22:57.184 --> 00:22:59.933 is for people who get their water

NOTE Confidence: 0.955318601304348

00:22:59.933 --> 00:23:02.400 from private well water that they

NOTE Confidence: 0.955318601304348

00:23:02.400 --> 00:23:04.885 need to take those extra steps to

NOTE Confidence: 0.955318601304348

00:23:04.885 --> 00:23:07.288 make sure that they're drinking clean

NOTE Confidence: 0.955318601304348

00:23:07.288 --> 00:23:09.398 and safe and healthy water.

NOTE Confidence: 0.955318601304348

00:23:09.400 --> 00:23:10.000 Is that right?

NOTE Confidence: 0.909750938

00:23:10.080 --> 00:23:12.120 Yes, it is. Yes. You said

NOTE Confidence: 0.909750938

00:23:12.120 --> 00:23:13.480 it right very correctly.

NOTE Confidence: 0.975002

00:23:13.720 --> 00:23:15.196 The other question that I have,

NOTE Confidence: 0.975002

00:23:15.200 --> 00:23:16.248 you mentioned that the

NOTE Confidence: 0.975002

00:23:16.248 --> 00:23:17.558 states are all doing

NOTE Confidence: 0.975002

00:23:17.560 --> 00:23:20.936 a very good job in terms of detecting

NOTE Confidence: 0.975002

00:23:20.936 --> 00:23:23.238 these carcinogens and purifying.

NOTE Confidence: 0.975002

00:23:23.240 --> 00:23:26.048 Yet you mentioned that not all

NOTE Confidence: 0.975002

00:23:26.048 --> 00:23:29.006 states have invested in things like

NOTE Confidence: 0.975002

00:23:29.006 --> 00:23:31.994 reverse osmosis like New York has.

NOTE Confidence: 0.975002

00:23:32.000 --> 00:23:34.320 And I would think,

NOTE Confidence: 0.975002

00:23:34.320 --> 00:23:36.000 and this is just a guess,

NOTE Confidence: 0.975002

00:23:36.000 --> 00:23:38.580 that the efforts that individual states

NOTE Confidence: 0.975002

00:23:38.580 --> 00:23:41.582 may take in terms of the investment

NOTE Confidence: 0.975002

00:23:41.582 --> 00:23:44.382 that they're going to make in terms

NOTE Confidence: 0.975002

00:23:44.462 --> 00:23:47.600 of clean water may also be different,

NOTE Confidence: 0.975002

00:23:47.600 --> 00:23:49.680 perhaps along political lines.

NOTE Confidence: 0.975002

00:23:49.680 --> 00:23:51.267 So, you know,

NOTE Confidence: 0.975002

00:23:51.267 --> 00:23:56.359 is drinking water in a red state like Texas,

NOTE Confidence: 0.975002

00:23:56.360 --> 00:23:58.680 for example,

NOTE Confidence: 0.975002

00:23:58.680 --> 00:24:01.193 can we be assured that that water

NOTE Confidence: 0.975002

00:24:01.193 --> 00:24:03.948 is just as safe as drinking water

NOTE Confidence: 0.975002

00:24:03.948 --> 00:24:06.840 from a blue state like New York?

NOTE Confidence: 0.868748666666667

00:24:06.880 --> 00:24:08.770 I think what it comes

NOTE Confidence: 0.868748666666667

00:24:08.770 --> 00:24:10.638 down to it's not opinion,

NOTE Confidence: 0.868748666666667

00:24:10.640 --> 00:24:12.516 it's not blue or red state

NOTE Confidence: 0.868748666666667

00:24:12.516 --> 00:24:14.440 if there is a contamination.

NOTE Confidence: 0.868748666666667

00:24:14.440 --> 00:24:16.324 For example, in Florida,

NOTE Confidence: 0.868748666666667

00:24:16.324 --> 00:24:18.679 there was a factory which was the

NOTE Confidence: 0.868748666666667

00:24:18.679 --> 00:24:20.559 contaminating source,

NOTE Confidence: 0.868748666666667

00:24:20.560 --> 00:24:23.199 in the water in the lake and everything.

NOTE Confidence: 0.868748666666667

00:24:23.200 --> 00:24:26.976 So the federal

NOTE Confidence: 0.868748666666667

00:24:26.976 --> 00:24:29.516 regulation is if you contaminate,

NOTE Confidence: 0.868748666666667

00:24:29.520 --> 00:24:32.076 you're responsible to clean the area.

NOTE Confidence: 0.868748666666667

00:24:32.080 --> 00:24:34.918 So the federal agency makes the

NOTE Confidence: 0.868748666666667

00:24:34.918 --> 00:24:38.577 company pay for getting all the

NOTE Confidence: 0.868748666666667

00:24:38.577 --> 00:24:41.357 chemicals secured out of the

NOTE Confidence: 0.868748666666667

00:24:41.360 --> 00:24:42.820 environment and

NOTE Confidence: 0.868748666666667

00:24:42.820 --> 00:24:43.915 protecting the people.

NOTE Confidence: 0.868748666666667

00:24:43.920 --> 00:24:47.680 So I think what the states are trying to do,

NOTE Confidence: 0.868748666666667

00:24:47.680 --> 00:24:51.800 especially the EPA,

NOTE Confidence: 0.868748666666667

00:24:51.800 --> 00:24:54.397 is trying to force all these rules

NOTE Confidence: 0.868748666666667

00:24:54.400 --> 00:24:56.280 and is doing a very good job

NOTE Confidence: 0.868748666666667

00:24:56.280 --> 00:24:57.280 in terms of that.

NOTE Confidence: 0.868748666666667

00:24:57.280 --> 00:24:58.780 Now you're going to have cases

NOTE Confidence: 0.868748666666667

00:24:58.839 --> 00:25:00.883 that you have a little bit more

NOTE Confidence: 0.868748666666667

00:25:00.883 --> 00:25:02.597 contamination there that it's up to the

NOTE Confidence: 0.868748666666667

00:25:02.600 --> 00:25:04.060 municipalities and

NOTE Confidence: 0.868748666666667

00:25:04.060 --> 00:25:05.520 everything to follow up.

NOTE Confidence: 0.868748666666667

00:25:05.520 --> 00:25:08.878 And I can assure you with my experience,

NOTE Confidence: 0.868748666666667

00:25:08.878 --> 00:25:11.513 especially with Florida and Ann Arbor,

NOTE Confidence: 0.868748666666667

00:25:11.513 --> 00:25:14.110 there are people working both from the

NOTE Confidence: 0.868748666666667

00:25:14.188 --> 00:25:17.000 communities also with the EPA,

NOTE Confidence: 0.868748666666667

00:25:17.000 --> 00:25:19.772 the Environmental Protection Agency,

NOTE Confidence: 0.868748666666667

00:25:19.772 --> 00:25:23.237 and also the state regulators

NOTE Confidence: 0.868748666666667

00:25:23.240 --> 00:25:26.760 to have safe drinking water.

NOTE Confidence: 0.961828158333333

00:25:27.000 --> 00:25:28.758 Yeah. It would seem to me,

NOTE Confidence: 0.961828158333333

00:25:28.760 --> 00:25:30.384 however, that

NOTE Confidence: 0.961828158333333

00:25:30.384 --> 00:25:32.008 particularly with the ubiquity

NOTE Confidence: 0.961828158333333

00:25:32.008 --> 00:25:33.914 of these chemicals, right.

NOTE Confidence: 0.961828158333333

00:25:33.914 --> 00:25:36.278 They're in shampoo, they're in Teflon,

NOTE Confidence: 0.961828158333333

00:25:36.280 --> 00:25:37.258 they're in detergents,

NOTE Confidence: 0.961828158333333

00:25:37.258 --> 00:25:39.383 they're in carpet, they're in clothing.

NOTE Confidence: 0.961828158333333

00:25:39.383 --> 00:25:41.669 It's going to be very difficult

NOTE Confidence: 0.961828158333333

00:25:41.669 --> 00:25:43.561 to identify particular companies

NOTE Confidence: 0.961828158333333

00:25:43.561 --> 00:25:46.429 that you can say you're responsible

NOTE Confidence: 0.961828158333333

00:25:46.429 --> 00:25:48.719 for contaminating this water,

NOTE Confidence: 0.961828158333333

00:25:48.720 --> 00:25:50.880 therefore you need to pay

NOTE Confidence: 0.961828158333333

00:25:50.880 --> 00:25:52.400 to clean this up.

NOTE Confidence: 0.961828158333333

00:25:52.400 --> 00:25:55.280 It seems like it's kind

NOTE Confidence: 0.961828158333333

00:25:55.280 --> 00:25:57.600 of a ubiquitous fed accompli.

00:25:59.400 --> 00:26:02.248 Yes and no.

00:26:05.440 --> 00:26:08.408 If you look at all the literature

NOTE Confidence: 0.924195973529412

00:26:08.408 --> 00:26:11.800 lately or the news,

NOTE Confidence: 0.924195973529412

00:26:11.800 --> 00:26:15.019 3M and DuPont are paying big dollars

NOTE Confidence: 0.924195973529412

00:26:15.019 --> 00:26:18.567 to purify the waters from the PFAS all

NOTE Confidence: 0.924195973529412

00:26:18.567 --> 00:26:21.556 over the country and also in Florida,

NOTE Confidence: 0.924195973529412

00:26:21.560 --> 00:26:23.640 for example,

NOTE Confidence: 0.924195973529412

00:26:23.640 --> 00:26:25.432 once you find the company

NOTE Confidence: 0.924195973529412

00:26:25.432 --> 00:26:27.159 that has caused the contamination,

NOTE Confidence: 0.924195973529412

00:26:27.160 --> 00:26:28.994 then they're responsible to clean it up.

NOTE Confidence: 0.924195973529412

00:26:29.000 --> 00:26:31.240 So yes, it does occur.

NOTE Confidence: 0.768663472

00:26:32.520 --> 00:26:35.775 Yeah, you would hope

NOTE Confidence: 0.768663472

00:26:35.775 --> 00:26:39.262 that that would be enough of a

NOTE Confidence: 0.768663472

00:26:39.262 --> 00:26:41.536 deterrent for companies to do

NOTE Confidence: 0.768663472

00:26:41.536 --> 00:26:43.756 their own self regulation

NOTE Confidence: 0.768663472

00:26:43.760 --> 00:26:46.784 and reduce the quantity of these

NOTE Confidence: 0.768663472

00:26:46.784 --> 00:26:48.800 chemicals that they're producing.

NOTE Confidence: 0.768663472

00:26:48.800 --> 00:26:51.680 Although it seems like New York felt that

NOTE Confidence: 0.768663472

00:26:51.680 --> 00:26:54.837 a ban was actually needed as well.

NOTE Confidence: 0.768663472

00:26:54.840 --> 00:26:57.879 Yes, yes, indeed.

NOTE Confidence: 0.768663472

00:26:57.880 --> 00:27:00.379 Now you had mentioned during the break

NOTE Confidence: 0.768663472

00:27:00.379 --> 00:27:03.872 that some of these ideas were

NOTE Confidence: 0.768663472

00:27:03.872 --> 00:27:05.752 particularly relevant for firefighters.

NOTE Confidence: 0.768663472

00:27:05.760 --> 00:27:06.887 Can you tell us a

NOTE Confidence: 0.768663472

00:27:06.887 --> 00:27:07.840 little bit more about that?

NOTE Confidence: 0.889337966666667

00:27:07.920 --> 00:27:09.144 Yes, firefighters are exposed

NOTE Confidence: 0.889337966666667

00:27:11.772 --> 00:27:13.784 to several chemicals including

NOTE Confidence: 0.889337966666667

00:27:13.784 --> 00:27:15.680 polycyclic aromatic hydrocarbons,

NOTE Confidence: 0.889337966666667

00:27:15.680 --> 00:27:18.620 benzene, formaldehyde, asbestos,

NOTE Confidence: 0.889337966666667

00:27:18.620 --> 00:27:21.560 chloroform, vinyl chloride.

NOTE Confidence: 0.889337966666667

00:27:21.560 --> 00:27:25.040 But most importantly also they're

NOTE Confidence: 0.889337966666667

00:27:25.040 --> 00:27:27.916 using this what we call AFFF

NOTE Confidence: 0.889337966666667

00:27:27.920 --> 00:27:30.440 which is known

NOTE Confidence: 0.889337966666667

00:27:30.440 --> 00:27:32.881 as the IQUS in firefighting foams.

NOTE Confidence: 0.889337966666667

00:27:32.881 --> 00:27:35.320 This is the one that they use to try to put

NOTE Confidence: 0.889337966666667

00:27:35.320 --> 00:27:39.080 the fire down. And this is all PFAS.

NOTE Confidence: 0.889337966666667

00:27:39.080 --> 00:27:41.156 And the studies have shown

NOTE Confidence: 0.889337966666667

00:27:41.156 --> 00:27:44.132 so far that the firefighters have

NOTE Confidence: 0.889337966666667

00:27:44.132 --> 00:27:46.576 significantly elevated PFAS in their

NOTE Confidence: 0.889337966666667

00:27:46.576 --> 00:27:48.136 blood compared to

NOTE Confidence: 0.889337966666667

00:27:48.136 --> 00:27:49.560 the other populations.

NOTE Confidence: 0.889337966666667

00:27:49.560 --> 00:27:52.260 Now we all have PFAS in our blood

NOTE Confidence: 0.889337966666667

00:27:52.260 --> 00:27:54.475 because we're all exposed to the PFAS.

NOTE Confidence: 0.889337966666667

00:27:54.480 --> 00:27:55.435 That doesn't mean that we're

NOTE Confidence: 0.889337966666667

00:27:55.435 --> 00:27:56.199 going to get sick,

NOTE Confidence: 0.889337966666667

00:27:56.200 --> 00:27:59.672 but the firefighters have a little bit

NOTE Confidence: 0.889337966666667

00:27:59.672 --> 00:28:02.888 higher levels and this is a concern.

NOTE Confidence: 0.889337966666667

00:28:02.888 --> 00:28:03.320 However,

NOTE Confidence: 0.889337966666667

00:28:03.320 --> 00:28:06.158 there is no epidemiological study yet,

NOTE Confidence: 0.889337966666667

00:28:06.160 --> 00:28:08.589 although we say it may increase the

NOTE Confidence: 0.889337966666667

00:28:08.589 --> 00:28:10.879 risk of cancer for these people,

NOTE Confidence: 0.889337966666667

00:28:10.880 --> 00:28:12.240 but there are not epidemiological

NOTE Confidence: 0.889337966666667

00:28:12.240 --> 00:28:13.600 studies to confirm that.

NOTE Confidence: 0.889337966666667

00:28:13.600 --> 00:28:17.877 So everything is on the risk idea.

NOTE Confidence: 0.889337966666667

00:28:17.880 --> 00:28:19.440 And for the firefighters,

NOTE Confidence: 0.889337966666667

00:28:19.440 --> 00:28:22.292 it's very important to have

NOTE Confidence: 0.889337966666667

00:28:22.292 --> 00:28:24.536 this protective gear that they will

00:28:25.160 --> 00:28:27.182 breathe clean air and

NOTE Confidence: 0.889337966666667

00:28:27.182 --> 00:28:29.399 be protected from the exposure

NOTE Confidence: 0.889337966666667

00:28:29.399 --> 00:28:30.599 to these chemicals.

NOTE Confidence: 0.842985168695652

00:28:31.200 --> 00:28:33.450 Dr. Vasilis Vasiliou is department chair

NOTE Confidence: 0.842985168695652

00:28:33.450 --> 00:28:35.871 and Susan Dwight Bliss professor of

NOTE Confidence: 0.842985168695652

00:28:35.871 --> 00:28:37.587 epidemiology and environmental Health

NOTE Confidence: 0.842985168695652

00:28:37.587 --> 00:28:40.519 Sciences at the Yale School of Medicine.

NOTE Confidence: 0.842985168695652

00:28:40.520 --> 00:28:42.576 If you have questions,

NOTE Confidence: 0.842985168695652

00:28:42.576 --> 00:28:44.578 the address is canceranswers@yale.edu

NOTE Confidence: 0.842985168695652

00:28:44.578 --> 00:28:47.326 and past editions of the program

NOTE Confidence: 0.842985168695652

00:28:47.326 --> 00:28:49.722 are available in audio and written

NOTE Confidence: 0.842985168695652

00:28:49.722 --> 00:28:50.654 form at yalecancercenter.org.

NOTE Confidence: 0.842985168695652

00:28:50.654 --> 00:28:53.300 We hope you'll join us next time to learn

NOTE Confidence: 0.842985168695652

00:28:53.355 --> 00:28:55.035 more about the fight against cancer.

NOTE Confidence: 0.842985168695652

00:28:55.040 --> 00:28:57.584 Funding for Yale Cancer Answers is

NOTE Confidence: 0.842985168695652

00:28:57.584 --> 00:29:00.000 provided by Smilow Cancer Hospital.