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 $00:00:06.120 \longrightarrow 00:00:08.320$ Welcome to Yale Cancer Answers NOTE Confidence: 0.929305264545454 $00:00:08.320 \rightarrow 00:00:10.080$ with doctor Anees Chappar. NOTE Confidence: 0.929305264545454 $00:00:10.080 \rightarrow 00:00:12.276$ Yale Cancer Answers features the latest NOTE Confidence: 0.929305264545454 $00:00:12.276 \rightarrow 00:00:14.516$ information on cancer care by welcoming NOTE Confidence: 0.929305264545454 $00:00:14.516 \rightarrow 00:00:17.036$ oncologists and specialists who are on the NOTE Confidence: 0.929305264545454 $00:00:17.036 \rightarrow 00:00:19.118$ forefront of the battle to fight cancer. NOTE Confidence: 0.929305264545454 $00{:}00{:}19{.}120 \dashrightarrow 00{:}00{:}21{.}370$ This week, it's a conversation about NOTE Confidence: 0.929305264545454 $00{:}00{:}21.370 \dashrightarrow 00{:}00{:}23.702$ 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 $00:00:25.640 \rightarrow 00:00:27.515$ 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

 $00{:}00{:}31{.}360 \dashrightarrow 00{:}00{:}33{.}999$ Sciences at the Yale School of Medicine,

 $00:00:34.000 \rightarrow 00:00:35.820$ where Doctor Chagpar is a

NOTE Confidence: 0.929305264545454

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

NOTE Confidence: 0.9596680486666667

 $00{:}00{:}38.280 \dashrightarrow 00{:}00{:}40.392$ So maybe we can start off by you

NOTE Confidence: 0.9596680486666667

 $00:00:40.392 \longrightarrow 00:00:42.396$ telling us a little bit more about

NOTE Confidence: 0.959668048666667

 $00:00:42.400 \longrightarrow 00:00:44.199$ 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

 $00{:}00{:}48.226 \dashrightarrow 00{:}00{:}52.198$ 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

 $00{:}00{:}55{.}560 \dashrightarrow 00{:}00{:}58{.}015$ which are conditions essentially caused

NOTE Confidence: 0.934027686

 $00:00:58.015 \rightarrow 00:01:00.704$ 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

 $00:01:05.218 \longrightarrow 00:01:07.410$ as you said, water, biological,

NOTE Confidence: 0.934027686

 $00:01:07.410 \longrightarrow 00:01:10.135$ physical and psychological

NOTE Confidence: 0.934027686

 $00{:}01{:}10.135 \dashrightarrow 00{:}01{:}12.775$ events that individuals are exposed

NOTE Confidence: 0.934027686

 $00:01:12.775 \longrightarrow 00:01:14.639$ to in their surroundings.

- NOTE Confidence: 0.934027686
- $00:01:16.320 \longrightarrow 00:01:18.035$ One of the things that we have,
- NOTE Confidence: 0.934027686
- $00:01:18.040 \longrightarrow 00:01:19.030$ launched is
- NOTE Confidence: 0.934027686
- $00:01:19.030 \longrightarrow 00:01:21.340$ 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
- $00:01:23.517 \rightarrow 00:01:26.120$ to have the Yale Superfund Center,
- NOTE Confidence: 0.934027686
- $00:01:26.120 \longrightarrow 00:01:28.856$ which is focused on what
- NOTE Confidence: 0.934027686
- $00:01:28.856 \rightarrow 00:01:31.799$ we call emerging contaminants
- NOTE Confidence: 0.934027686
- $00{:}01{:}32.776 \dashrightarrow 00{:}01{:}35.704$ and those are chemicals of concern
- NOTE Confidence: 0.934027686
- $00{:}01{:}35{.}704 \dashrightarrow 00{:}01{:}38{.}797$ that are not regulated by the
- NOTE Confidence: 0.934027686
- $00:01:38.797 \longrightarrow 00:01:41.180$ federal or the state government and
- NOTE Confidence: 0.934027686
- $00:01:41.180 \longrightarrow 00:01:43.560$ it could be present in our water.
- NOTE Confidence: 0.934027686
- $00{:}01{:}43.560 \dashrightarrow 00{:}01{:}46.716$ Now there are implications,
- NOTE Confidence: 0.934027686
- $00:01:46.720 \longrightarrow 00:01:49.024$ there are health implications of the
- NOTE Confidence: 0.934027686
- $00{:}01{:}49{.}024 \dashrightarrow 00{:}01{:}51{.}400$ presence of these chemicals in our water.
- NOTE Confidence: 0.934027686
- $00:01:51.400 \dashrightarrow 00:01:52.918$ And this is what we're studying.
- NOTE Confidence: 0.934027686

 $00:01:52.920 \longrightarrow 00:01:57.015$ We're trying to find if they are

NOTE Confidence: 0.934027686

 $00{:}01{:}57.015 \dashrightarrow 00{:}01{:}59.285$ indeed causing issues in human health

NOTE Confidence: 0.934027686

 $00:01:59.285 \rightarrow 00:02:02.086$ and how we can really mitigate those

NOTE Confidence: 0.934027686

 $00:02:02.086 \dashrightarrow 00:02:04.716$ chemicals from our drinking water.

NOTE Confidence: 0.888607394285714

 $00:02:06.120 \longrightarrow 00:02:09.560$ That is really concerning.

NOTE Confidence: 0.888607394285714

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

NOTE Confidence: 0.888607394285714

 $00:02:11.160 \rightarrow 00:02:14.370$ everybody who is listening is very

NOTE Confidence: 0.888607394285714

 $00:02:14.370 \dashrightarrow 00:02:16.430$ concerned about our drinking water.

NOTE Confidence: 0.888607394285714

 $00{:}02{:}16{.}430 \dashrightarrow 00{:}02{:}19{.}249$ We tend to take it for granted

NOTE Confidence: 0.888607394285714

 $00:02:19.249 \rightarrow 00:02:21.600$ that living in a first world nation,

NOTE Confidence: 0.888607394285714

 $00{:}02{:}21.600 \dashrightarrow 00{:}02{:}24.720$ we have clean drinking water that

NOTE Confidence: 0.888607394285714

 $00:02:24.720 \rightarrow 00:02:26.760$ certainly would not cause us harm.

NOTE Confidence: 0.888607394285714

 $00:02:26.760 \longrightarrow 00:02:29.714$ So the concept that there may be

NOTE Confidence: 0.888607394285714

 $00:02:29.720 \rightarrow 00:02:32.954$ chemicals that may induce cancer in our

NOTE Confidence: 0.888607394285714

 $00:02:32.954 \rightarrow 00:02:35.517$ 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
- $00:02:38.373 \rightarrow 00:02:40.629$ about how you stumbled into this
- NOTE Confidence: 0.888607394285714
- $00:02:40.629 \rightarrow 00:02:43.440$ research and what you found so far?
- NOTE Confidence: 0.888607394285714
- $00:02:43.440 \longrightarrow 00:02:47.436$ Does the public have a need to be concerned,
- NOTE Confidence: 0.888607394285714
- $00:02:47.440 \longrightarrow 00:02:49.230$ particularly when you say that
- NOTE Confidence: 0.888607394285714
- $00:02:49.230 \longrightarrow 00:02:51.500$ 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
- $00:02:53.520 \rightarrow 00:02:56.528$ Well the one that we are studying
- NOTE Confidence: 0.848927245
- $00:02:56.528 \rightarrow 00:02:59.624$ is a chemical called 1-4 dioxane,
- NOTE Confidence: 0.848927245
- $00{:}02{:}59{.}624 \dashrightarrow 00{:}03{:}02{.}336$ which is used as a stabilizer
- NOTE Confidence: 0.848927245
- $00:03:02.336 \longrightarrow 00:03:04.485$ of other solvents.
- NOTE Confidence: 0.848927245
- $00:03:04.485 \rightarrow 00:03:06.560$ The problem with this chemical
- NOTE Confidence: 0.848927245
- $00:03:06.560 \longrightarrow 00:03:08.919$ is it cannot be filtered and
- NOTE Confidence: 0.848927245
- $00:03:08.919 \longrightarrow 00:03:11.664$ it's also can be found in our
- NOTE Confidence: 0.848927245
- $00{:}03{:}11.664 \dashrightarrow 00{:}03{:}14.119$ household items such as detergents, shampoos and so on,
- $00{:}03{:}15{.}440 \dashrightarrow 00{:}03{:}18{.}246$ so eventually it'll end up into
- NOTE Confidence: 0.848927245

 $00:03:18.246 \longrightarrow 00:03:20.276$ the water table and eventually

NOTE Confidence: 0.848927245

 $00:03:20.276 \longrightarrow 00:03:23.560$ can end up in our drinking water.

NOTE Confidence: 0.848927245

 $00:03:23.560 \longrightarrow 00:03:26.320$ That's the bad news.

NOTE Confidence: 0.848927245

 $00{:}03{:}26{.}320 \dashrightarrow 00{:}03{:}28{.}606$ And the bad news also about

NOTE Confidence: 0.848927245

 $00:03:28.606 \dashrightarrow 00:03:31.218$ 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

 $00{:}03{:}33{.}240 \dashrightarrow 00{:}03{:}35{.}136$ which means that there are studies

NOTE Confidence: 0.848927245

 $00:03:35.136 \longrightarrow 00:03:36.841$ in animals that confirm

NOTE Confidence: 0.848927245

 $00{:}03{:}36{.}841 \dashrightarrow 00{:}03{:}38{.}357$ that this is carcinogens.

NOTE Confidence: 0.848927245

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

NOTE Confidence: 0.848927245

 $00{:}03{:}38{.}953 \dashrightarrow 00{:}03{:}41{.}325$ there are not epidemiological

NOTE Confidence: 0.848927245

 $00:03:41.325 \longrightarrow 00:03:45.120$ studies to confirm that this

NOTE Confidence: 0.848927245

 $00:03:45.120 \longrightarrow 00:03:47.653$ chemical causes cancer in humans.

NOTE Confidence: 0.848927245

 $00:03:47.653 \longrightarrow 00:03:49.519$ So this is what we're trying

NOTE Confidence: 0.848927245

 $00{:}03{:}49{.}519 \dashrightarrow 00{:}03{:}51{.}478$ to get an answer about.

NOTE Confidence: 0.848927245

 $00:03:51.480 \rightarrow 00:03:54.462$ And so we're conducting studies in

- NOTE Confidence: 0.848927245
- $00:03:54.462 \longrightarrow 00:03:58.021$ animal models to find the mechanism by

 $00{:}03{:}58{.}021 \dashrightarrow 00{:}04{:}00{.}951$ 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

 $00:04:03.760 \longrightarrow 00:04:06.336$ biomarkers for human exposures.

NOTE Confidence: 0.848927245

 $00{:}04{:}06{.}336 \dashrightarrow 00{:}04{:}09{.}556$ And at the same time,

NOTE Confidence: 0.848927245

 $00:04:09.560 \rightarrow 00:04:11.252$ 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

 $00:04:13.872 \rightarrow 00:04:15.877$ people are exposed to this.

NOTE Confidence: 0.848927245

 $00:04:15.880 \longrightarrow 00:04:18.372$ 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

 $00{:}04{:}20.760 \dashrightarrow 00{:}04{:}23.053$ We don't have that much of 1-4

NOTE Confidence: 0.848927245

 $00:04:23.053 \longrightarrow 00:04:24.918$ dioxide in the drinking water.

NOTE Confidence: 0.848927245

 $00{:}04{:}24{.}920 \dashrightarrow 00{:}04{:}27{.}440$ I would say almost nothing.

NOTE Confidence: 0.848927245

 $00:04:27.440 \longrightarrow 00:04:27.908$ However,

 $00:04:27.908 \rightarrow 00:04:30.716$ there are areas in United States

NOTE Confidence: 0.848927245

 $00{:}04{:}30{.}716 \dashrightarrow 00{:}04{:}33{.}256$ that there are considerable levels

NOTE Confidence: 0.848927245

 $00:04:33.256 \rightarrow 00:04:37.232$ of 1-4 dioxin in the drinking water.

NOTE Confidence: 0.848927245

 $00:04:37.240 \longrightarrow 00:04:40.042$ Now remember that this can

NOTE Confidence: 0.848927245

 $00:04:40.042 \rightarrow 00:04:42.566$ 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

 $00:04:45.920 \longrightarrow 00:04:48.760$ osmosis which is really

NOTE Confidence: 0.848927245

 $00:04:48.760 \longrightarrow 00:04:50.840$ 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

 $00:04:54.120 \longrightarrow 00:04:57.080$ 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

 $00:05:01.024 \longrightarrow 00:05:03.867$ 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

 $00:05:06.320 \longrightarrow 00:05:08.360$ 1-4 dioxin in their waters.

NOTE Confidence: 0.848927245

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

NOTE Confidence: 0.848927245

 $00:05:08.690 \longrightarrow 00:05:10.670$ with all the efforts and this

 $00:05:10.670 \longrightarrow 00:05:12.880$ is why people should

NOTE Confidence: 0.848927245

 $00:05:12.880 \dashrightarrow 00:05:15.184$ 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

 $00:05:17.320 \longrightarrow 00:05:20.307$ they have put big reverse

NOTE Confidence: 0.848927245

 $00{:}05{:}20{.}307 \dashrightarrow 00{:}05{:}22{.}842$ osmosis on municipal wells where

NOTE Confidence: 0.848927245

 $00{:}05{:}22.842 \dashrightarrow 00{:}05{:}25.360$ the public water comes from.

NOTE Confidence: 0.848927245

 $00{:}05{:}25{.}360 \dashrightarrow 00{:}05{:}28{.}293$ So we have seen that in the last

NOTE Confidence: 0.848927245

 $00:05:28.293 \rightarrow 00:05:30.399$ couple of years the water quality

NOTE Confidence: 0.848927245

 $00:05:30.399 \longrightarrow 00:05:32.780$ in the areas that used to be

NOTE Confidence: 0.848927245

 $00:05:32.780 \longrightarrow 00:05:35.776$ high levels of 1-4 dioxin is

NOTE Confidence: 0.848927245

 $00:05:35.776 \longrightarrow 00:05:37.672$ getting clean.

NOTE Confidence: 0.848927245

 $00{:}05{:}37{.}672 \dashrightarrow 00{:}05{:}40{.}920$ But we still have other areas.

NOTE Confidence: 0.848927245

 $00:05:40.920 \rightarrow 00:05:41.660$ For example,

NOTE Confidence: 0.848927245

 $00{:}05{:}41.660 \dashrightarrow 00{:}05{:}43.880$ we have been contacted by Michigan,

NOTE Confidence: 0.848927245

 $00:05:43.880 \longrightarrow 00:05:46.120$ Ann Arbor,

 $00{:}05{:}46{.}120 \dashrightarrow 00{:}05{:}48{.}616$ Florida, that they have a reas that they still

NOTE Confidence: 0.848927245

 $00:05:48.616 \rightarrow 00:05:50.916$ have really high levels of this chemical.

NOTE Confidence: 0.848927245

 $00{:}05{:}50{.}920 \dashrightarrow 00{:}05{:}53{.}648$ Now the other thing I want

NOTE Confidence: 0.848927245

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

NOTE Confidence: 0.848927245

 $00{:}05{:}56.768 \dashrightarrow 00{:}05{:}58.588$ there are some other chemicals

NOTE Confidence: 0.848927245

 $00:05:58.588 \longrightarrow 00:05:59.680$ that everybody knows.

NOTE Confidence: 0.848927245

 $00:05:59.680 \longrightarrow 00:06:01.360$ You probably have heard

NOTE Confidence: 0.848927245

 $00:06:01.360 \rightarrow 00:06:03.880$ of what we call the PFAS,

NOTE Confidence: 0.848927245

 $00{:}06{:}03.880 \dashrightarrow 00{:}06{:}06{.}211$ the perfluorinated organic

NOTE Confidence: 0.848927245

 $00:06:06.211 \rightarrow 00:06:09.319$ molecules that are present.

NOTE Confidence: 0.848927245

 $00{:}06{:}09{.}320 \dashrightarrow 00{:}06{:}12{.}395$ These are man made chemicals

NOTE Confidence: 0.848927245

 $00{:}06{:}12.395 \dashrightarrow 00{:}06{:}14.240$ that are

NOTE Confidence: 0.848927245

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

NOTE Confidence: 0.848927245

 $00:06:17.373 \rightarrow 00:06:21.668$ and also on your clothing.

NOTE Confidence: 0.848927245

 $00:06:21.668 \rightarrow 00:06:25.000$ And this has existed for many,

NOTE Confidence: 0.848927245

 $00:06:25.000 \rightarrow 00:06:25.760$ many years.

- NOTE Confidence: 0.848927245
- $00:06:25.760 \longrightarrow 00:06:28.040$ And the problem with these chemicals
- NOTE Confidence: 0.848927245
- $00{:}06{:}28.040 \dashrightarrow 00{:}06{:}31.078$ is they are very persistent in our body.
- NOTE Confidence: 0.848927245
- $00:06:31.080 \rightarrow 00:06:33.400$ 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
- $00:06:36.680 \rightarrow 00:06:40.194$ very difficult to be removed from our body.
- NOTE Confidence: 0.908502562857143
- $00:06:40.200 \rightarrow 00:06:42.850$ 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
- $00:06:50.710 \longrightarrow 00:06:54.360$ really put the regulatory issues for
- NOTE Confidence: 0.908502562857143
- $00:06:54.360 \longrightarrow 00:06:56.280$ six of these compounds.
- NOTE Confidence: 0.908502562857143
- $00:06:56.280 \rightarrow 00:06:58.881$ However, the problem is there about 9000 of
- NOTE Confidence: 0.908502562857143
- $00:06:58.881 \rightarrow 00:07:01.076$ these compounds and this is a major issue.
- NOTE Confidence: 0.908502562857143
- $00{:}07{:}01.080 \dashrightarrow 00{:}07{:}03.156$ So in addition to 1-4 dioxin,
- NOTE Confidence: 0.908502562857143
- $00{:}07{:}03.160 \dashrightarrow 00{:}07{:}05.266$ you have the PFAS where they are
- NOTE Confidence: 0.908502562857143
- $00:07:05.266 \rightarrow 00:07:07.480$ 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

 $00:07:16.216 \longrightarrow 00:07:18.840$ throughout the world.

NOTE Confidence: 0.908502562857143

 $00:07:18.840 \longrightarrow 00:07:22.932$ And this was because it was

NOTE Confidence: 0.908502562857143

 $00{:}07{:}22{.}932 \dashrightarrow 00{:}07{:}25{.}508$ produced to generate fire resistant

NOTE Confidence: 0.908502562857143

 $00:07:25.508 \longrightarrow 00:07:27.640$ clothes,

NOTE Confidence: 0.831405036

 $00:07:29.680 \longrightarrow 00:07:31.280$ cookwares, and stuff like that.

NOTE Confidence: 0.799274333333333

 $00:07:32.920 \longrightarrow 00:07:37.524$ So just a few questions to kind of go

NOTE Confidence: 0.799274333333333

 $00:07:37.524 \dashrightarrow 00:07:40.080$ over some of the things that you've told us.

NOTE Confidence: 0.799274333333333

 $00:07:40.080 \longrightarrow 00:07:45.068$ So if these PFAS, we know that

NOTE Confidence: 0.799274333333333

 $00:07:45.068 \rightarrow 00:07:47.079$ they are carcinogenic, is that right?

NOTE Confidence: 0.810187672

 $00:07:47.280 \longrightarrow 00:07:49.760$ Yes, we do.

NOTE Confidence: 0.9363470566666667

 $00{:}07{:}50{.}520 \dashrightarrow 00{:}07{:}53{.}887$ And so if they're everywhere and they're

NOTE Confidence: 0.9363470566666667

 $00:07:53.887 \dashrightarrow 00:07:57.157$ very difficult to get out of your body,

NOTE Confidence: 0.9363470566666667

 $00:07:57.160 \rightarrow 00:08:00.160$ do you really think that in the short

- NOTE Confidence: 0.9363470566666667
- $00:08:00.160 \longrightarrow 00:08:03.393$ term there will be any impact in terms
- NOTE Confidence: 0.9363470566666667
- $00:08:03.393 \rightarrow 00:08:05.820$ of regulation actually causing a
- NOTE Confidence: 0.9363470566666667
- $00{:}08{:}05{.}820 \dashrightarrow 00{:}08{:}08{.}250$ reduction in cancer rates that are
- NOTE Confidence: 0.9363470566666667
- $00:08:08.328 \rightarrow 00:08:10.758$ secondary to these PFAS molecules?
- NOTE Confidence: 0.9363470566666667
- 00:08:10.760 --> 00:08:14.477 Because, if I was exposed
- NOTE Confidence: 0.9363470566666667
- 00:08:14.477 --> 00:08:17.840 to PFAS using Teflon cookware
- NOTE Confidence: 0.9363470566666667
- 00:08:17.840 --> 00:08:21.080 in my younger years,
- NOTE Confidence: 0.9363470566666667
- $00:08:21.080 \rightarrow 00:08:22.840$ and it's very difficult to get out of
- NOTE Confidence: 0.9363470566666667
- $00:08:22.840 \dashrightarrow 00:08:24.960$ the body, is the damage already done?
- NOTE Confidence: 0.9363470566666667
- $00:08:24.960 \longrightarrow 00:08:26.436$ I mean, is there any hope?
- NOTE Confidence: 0.87734868
- $00:08:26.720 \dashrightarrow 00:08:29.359$ Well, there is plenty of hope actually.
- NOTE Confidence: 0.87734868
- $00:08:29.360 \longrightarrow 00:08:33.520$ Remember that our body
- NOTE Confidence: 0.87734868
- $00:08:33.520 \longrightarrow 00:08:35.878$ 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
- $00:08:38.360 \longrightarrow 00:08:40.376$ even at the genetic level, you can
- NOTE Confidence: 0.87734868

 $00:08:40.376 \rightarrow 00:08:43.320$ have the repair of your DNA and so on.

NOTE Confidence: 0.87734868

 $00{:}08{:}43{.}320 \dashrightarrow 00{:}08{:}45{.}160$ 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

 $00:08:46.840 \longrightarrow 00:08:48.568$ especially with the PFAS,

NOTE Confidence: 0.87734868

 $00{:}08{:}48.568 \dashrightarrow 00{:}08{:}50.250$ there are a number of other

NOTE Confidence: 0.87734868

 $00:08:50.250 \longrightarrow 00:08:51.840$ issues that it could cause.

NOTE Confidence: 0.87734868

 $00:08:51.840 \dashrightarrow 00:08:55.480$ And it's not only your Teflon cookware.

NOTE Confidence: 0.87734868

 $00:08:55.480 \longrightarrow 00:08:57.118$ It is also in the carpet.

NOTE Confidence: 0.87734868

 $00{:}08{:}57{.}120 \dashrightarrow 00{:}08{:}59{.}528$ It is in the plastic that you put

NOTE Confidence: 0.87734868

 $00:08:59.528 \rightarrow 00:09:04.080$ in the water and everything.

NOTE Confidence: 0.87734868

 $00:09:04.080 \dashrightarrow 00:09:06.320$ We know that it causes disease.

NOTE Confidence: 0.87734868

 $00:09:06.320 \rightarrow 00:09:09.272$ 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

 $00:09:11.720 \longrightarrow 00:09:14.195$ they can be filtered much

NOTE Confidence: 0.87734868

 $00:09:14.195 \longrightarrow 00:09:16.294$ easier than the 1-4 dioxane.

NOTE Confidence: 0.87734868

 $00:09:16.294 \longrightarrow 00:09:19.202$ So there are now a lot of

- NOTE Confidence: 0.87734868
- $00{:}09{:}19{.}202 \dashrightarrow 00{:}09{:}21{.}440$ filtering that is going on.
- NOTE Confidence: 0.87734868
- $00{:}09{:}21.440 \dashrightarrow 00{:}09{:}24.384$ But we still have a lot of PFAS
- NOTE Confidence: 0.87734868
- $00{:}09{:}24.384 \dashrightarrow 00{:}09{:}27.636$ in the area and
- NOTE Confidence: 0.87734868
- $00:09:27.640 \longrightarrow 00:09:29.586$ it is the one thing that I
- NOTE Confidence: 0.87734868
- $00{:}09{:}29{.}586 \dashrightarrow 00{:}09{:}31{.}160$ would advise is
- NOTE Confidence: 0.87734868
- $00:09:31.160 \longrightarrow 00:09:32.555$ filtering the water especially in
- NOTE Confidence: 0.87734868
- $00:09:32.555 \longrightarrow 00:09:34.439$ the areas that you know have
- NOTE Confidence: 0.87734868
- $00:09:34.440 \longrightarrow 00:09:36.440$ higher levels than
- NOTE Confidence: 0.87734868
- $00:09:36.440 \longrightarrow 00:09:38.288$ what the maximum level
- NOTE Confidence: 0.87734868
- $00:09:38.288 \longrightarrow 00:09:40.556$ recommended to be there.
- NOTE Confidence: 0.965383492
- $00{:}09{:}42{.}040 \dashrightarrow 00{:}09{:}45{.}770$ 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
- $00:09:49.640 \rightarrow 00:09:52.080$ equipment technology may be expensive,
- NOTE Confidence: 0.965383492
- $00:09:52.080 \dashrightarrow 00:09:54.040$ you mentioned 6 to \$10,000,
- NOTE Confidence: 0.965383492
- $00:09:54.040 \longrightarrow 00:09:56.664$ it seems to be a small price to
- NOTE Confidence: 0.965383492

 $00:09:56.664 \rightarrow 00:10:00.044$ pay if we know that it can

NOTE Confidence: 0.965383492

 $00{:}10{:}00{.}044 \dashrightarrow 00{:}10{:}02{.}152$ eliminate a potential carcinogen.

NOTE Confidence: 0.965383492

 $00:10:02.160 \longrightarrow 00:10:05.600$ The question really is,

NOTE Confidence: 0.965383492

 $00:10:05.600 \longrightarrow 00:10:07.679$ do we know that it's a carcinogen?

NOTE Confidence: 0.965383492

 $00:10:07.680 \longrightarrow 00:10:08.800$ When you talk about,

NOTE Confidence: 0.965383492

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

NOTE Confidence: 0.965383492

 $00{:}10{:}10{.}432 \dashrightarrow 00{:}10{:}12{.}576$ have there been epidemiologic

NOTE Confidence: 0.965383492

 $00{:}10{:}12.576 \dashrightarrow 00{:}10{:}15.615$ 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

 $00{:}10{:}20.816 \dashrightarrow 00{:}10{:}23.250$ there's a difference in cancer

NOTE Confidence: 0.965383492

 $00{:}10{:}23.250 \dashrightarrow 00{:}10{:}25.470$ rates according to that to

NOTE Confidence: 0.965383492

 $00:10:25.470 \longrightarrow 00:10:28.710$ give you at least a signal as to

NOTE Confidence: 0.965383492

 $00:10:28.710 \longrightarrow 00:10:30.755$ whether this is causing cancers?

NOTE Confidence: 0.9309766925

 $00:10:31.040 \longrightarrow 00:10:31.790$ Excellent question.

NOTE Confidence: 0.9309766925

 $00:10:31.790 \rightarrow 00:10:34.413$ So to answer the first question, no,

- NOTE Confidence: 0.9309766925
- $00:10:34.413 \longrightarrow 00:10:36.278$ there are not epidemiological studies.
- NOTE Confidence: 0.9309766925
- $00:10:36.280 \rightarrow 00:10:39.792$ 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
- $00:10:42.200 \rightarrow 00:10:45.582$ they call it a probable human carcinogen.
- NOTE Confidence: 0.9309766925
- $00{:}10{:}45{.}582 \dashrightarrow 00{:}10{:}49{.}420$ So our center is funded
- NOTE Confidence: 0.9309766925
- $00:10:49.420 \longrightarrow 00:10:52.090$ 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
- $00:10:54.520 \longrightarrow 00:10:56.314$ The 2nd is exactly what you're
- NOTE Confidence: 0.9309766925
- $00:10:56.314 \rightarrow 00:10:58.928$ saying and the basis of
- NOTE Confidence: 0.9309766925
- $00:10:58.928 \longrightarrow 00:11:00.613$ an epidemiological study is that we
- NOTE Confidence: 0.9309766925
- $00:11:00.613 \rightarrow 00:11:02.680$ can find people that have
- NOTE Confidence: 0.9309766925
- $00{:}11{:}02.680 \dashrightarrow 00{:}11{:}04.600$ been exposed to 1.4 dioxine.
- NOTE Confidence: 0.9309766925
- $00:11:04.600 \rightarrow 00:11:06.476$ Then we can look at the history,
- NOTE Confidence: 0.9309766925
- $00{:}11{:}06{.}480 \dashrightarrow 00{:}11{:}07{.}800$ we can look at the cancers.
- NOTE Confidence: 0.9309766925
- $00:11:07.800 \longrightarrow 00:11:10.320$ Then we can see if there is any
- NOTE Confidence: 0.9309766925

 $00:11:10.320 \rightarrow 00:11:13.316$ 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

 $00{:}11{:}16.251 \dashrightarrow 00{:}11{:}19.197$ between the exposures and the cancer.

NOTE Confidence: 0.9309766925

 $00:11:19.200 \longrightarrow 00:11:22.440$ So the other thing that our center is

NOTE Confidence: 0.9309766925

 $00:11:22.440 \longrightarrow 00:11:27.280$ funded for and as you said \$10,000

NOTE Confidence: 0.9309766925

 $00{:}11{:}27.280 \dashrightarrow 00{:}11{:}28.560$ is a small price.

NOTE Confidence: 0.9309766925

 $00{:}11{:}28{.}560 \dashrightarrow 00{:}11{:}30{.}815$ But remember there are

NOTE Confidence: 0.9309766925

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

NOTE Confidence: 0.9309766925

 $00{:}11{:}31{.}720 \dashrightarrow 00{:}11{:}34{.}000$ Now for an individual house to

NOTE Confidence: 0.9309766925

 $00:11:34.000 \rightarrow 00:11:36.536$ just get a reverse osmosis for

NOTE Confidence: 0.9309766925

 $00:11:36.536 \longrightarrow 00:11:39.200$ \$10,000 might not be that easy.

NOTE Confidence: 0.9309766925

 $00:11:39.200 \longrightarrow 00:11:40.520$ So what we're trying to do,

NOTE Confidence: 0.9309766925

 $00:11:40.520 \longrightarrow 00:11:42.782$ and this is our engineers here

NOTE Confidence: 0.9309766925

 $00:11:42.782 \rightarrow 00:11:45.165$ from the school of engineering,

NOTE Confidence: 0.9309766925

 $00{:}11{:}45{.}165 \dashrightarrow 00{:}11{:}47{.}990$ is they were

NOTE Confidence: 0.9309766925

 $00:11:47.990 \longrightarrow 00:11:50.850$ trying to develop small

- NOTE Confidence: 0.9309766925
- $00:11:50.850 \rightarrow 00:11:53.375$ devices utilizing what we call
- NOTE Confidence: 0.9309766925
- $00{:}11{:}53{.}375 \dashrightarrow 00{:}11{:}55{.}800$ advanced oxidation processes.
- NOTE Confidence: 0.9309766925
- $00{:}11{:}55{.}800 \dashrightarrow 00{:}12{:}00{.}170$ And those could be very cheap devices
- NOTE Confidence: 0.9309766925
- $00:12:00.170 \longrightarrow 00:12:03.880$ that can purify individual tap water.
- NOTE Confidence: 0.9309766925
- $00{:}12{:}03.880 \dashrightarrow 00{:}12{:}06.226$ And the other program that we
- NOTE Confidence: 0.9309766925
- $00{:}12{:}06{.}226 \dashrightarrow 00{:}12{:}08{.}789$ have also with the our engineers
- NOTE Confidence: 0.9309766925
- $00{:}12{:}08.789 \dashrightarrow 00{:}12{:}12.030$ is to develop sensors that we can
- NOTE Confidence: 0.9309766925
- $00:12:12.130 \longrightarrow 00:12:14.920$ detect the 1.4 dioxin in the water.
- NOTE Confidence: 0.96699832444444
- $00{:}12{:}16{.}480 \dashrightarrow 00{:}12{:}19{.}756$ It seems like the other idea,
- NOTE Confidence: 0.96699832444444
- $00:12:19.760 \longrightarrow 00:12:23.620$ which you mentioned as well, is not to put the
- NOTE Confidence: 0.96699832444444
- $00:12:23.620 \rightarrow 00:12:26.790$ burden of the cost on individual households,
- NOTE Confidence: 0.96699832444444
- $00{:}12{:}26.790 \dashrightarrow 00{:}12{:}31.339$ but rather to manage it at municipal or
- NOTE Confidence: 0.96699832444444
- $00{:}12{:}31{.}339 \dashrightarrow 00{:}12{:}35{.}026$ state levels where
- NOTE Confidence: 0.96699832444444
- $00{:}12{:}35{.}026 \dashrightarrow 00{:}12{:}39{.}093$ before that water
- NOTE Confidence: 0.96699832444444
- $00{:}12{:}39{.}093 \dashrightarrow 00{:}12{:}43{.}052$ gets from the well or the dam or whatever
- NOTE Confidence: 0.96699832444444

 $00:12:43.052 \rightarrow 00:12:46.890$ to your tap that it goes through some

NOTE Confidence: 0.96699832444444

 $00:12:46.890 \longrightarrow 00:12:49.261$ reverse osmosis or filtering mechanism.

NOTE Confidence: 0.96699832444444

 $00:12:49.261 \rightarrow 00:12:53.559$ So that the water that you get from the tap,

NOTE Confidence: 0.96699832444444

 $00:12:53.560 \rightarrow 00:12:56.556$ you can be sure it is safe.

NOTE Confidence: 0.96699832444444

 $00:12:56.560 \longrightarrow 00:12:58.793$ And so it really is wonderful

NOTE Confidence: 0.96699832444444

 $00:12:58.793 \longrightarrow 00:13:01.080$ to hear that New York did that.

NOTE Confidence: 0.96699832444444

 $00:13:01.080 \longrightarrow 00:13:02.720$ And I suppose the other

NOTE Confidence: 0.96699832444444

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

NOTE Confidence: 0.96699832444444

 $00:13:03.960 \rightarrow 00:13:06.240$ although I suspect it would take more time,

NOTE Confidence: 0.96699832444444

 $00:13:06.240 \rightarrow 00:13:10.326$ is to look at those cancer rates before and

NOTE Confidence: 0.96699832444444

 $00:13:10.326 \rightarrow 00:13:13.192$ after they implemented that technology.

NOTE Confidence: 0.96699832444444

 $00:13:13.192 \rightarrow 00:13:16.520$ Is that something that is being looked at?

NOTE Confidence: 0.96699832444444

 $00{:}13{:}16{.}520 \dashrightarrow 00{:}13{:}17{.}960$ And are other states thinking

NOTE Confidence: 0.96699832444444

 $00:13:17.960 \rightarrow 00:13:19.112$ 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

 $00:13:22.000 \rightarrow 00:13:24.012$ 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
- $00{:}13{:}27.850 \dashrightarrow 00{:}13{:}29.988$ broader event throughout the country.
- NOTE Confidence: 0.80639787
- $00:13:29.988 \longrightarrow 00:13:32.640$ And they use a lot of filtration.
- NOTE Confidence: 0.80639787
- $00:13:32.640 \longrightarrow 00:13:34.002$ Now, I have to assure you
- NOTE Confidence: 0.80639787
- $00:13:34.002 \rightarrow 00:13:35.280$ 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
- $00{:}13{:}41{.}280 \dashrightarrow 00{:}13{:}43{.}520$ 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
- $00{:}13{:}45{.}560 \dashrightarrow 00{:}13{:}48{.}280$ 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
- $00:13:49.384 \rightarrow 00:13:53.600$ the state of New York not only installed the
- NOTE Confidence: 0.80639787
- $00{:}13{:}53.600 \dashrightarrow 00{:}13{:}55.980$ reverse osmosis in all these
- NOTE Confidence: 0.80639787
- $00:13:55.980 \longrightarrow 00:13:58.440$ sources of municipal water,
- NOTE Confidence: 0.80639787

 $00:13:58.440 \rightarrow 00:14:00.640$ but they did something which is very good.

NOTE Confidence: 0.80639787

 $00{:}14{:}00{.}640 \dashrightarrow 00{:}14{:}02{.}824$ And I think more states now are

NOTE Confidence: 0.80639787

 $00:14:02.824 \rightarrow 00:14:05.160$ going to follow in this legislation.

NOTE Confidence: 0.80639787

 $00{:}14{:}05{.}160 \dashrightarrow 00{:}14{:}08{.}040$ So what New York did is

NOTE Confidence: 0.80639787

 $00{:}14{:}08{.}040 \dashrightarrow 00{:}14{:}09{.}440$ as I told you before,

NOTE Confidence: 0.80639787

 $00:14:09.440 \longrightarrow 00:14:13.400$ 1-4 dioxin is either a component,

NOTE Confidence: 0.80639787

 $00:14:13.400 \rightarrow 00:14:15.934$ or it could be byproduct

NOTE Confidence: 0.80639787

 $00:14:15.934 \longrightarrow 00:14:18.998$ in a lot of our household items.

NOTE Confidence: 0.80639787

 $00{:}14{:}19{.}000 \dashrightarrow 00{:}14{:}24{.}530$ So the state of New York banned all those

NOTE Confidence: 0.80639787

 $00{:}14{:}24{.}530 \dashrightarrow 00{:}14{:}27{.}820$ 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

 $00{:}14{:}30{.}964 \dashrightarrow 00{:}14{:}34{.}912$ obliged to have 1-4 dioxane free or

NOTE Confidence: 0.80639787

 $00:14:34.912 \longrightarrow 00:14:37.800$ generating 1-4 dioxane free products.

NOTE Confidence: 0.80639787

 $00{:}14{:}37{.}800 \dashrightarrow 00{:}14{:}42{.}380$ So by that way you decrease the number of

NOTE Confidence: 0.80639787

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

NOTE Confidence: 0.80639787

 $00:14:46.240 \rightarrow 00:14:48.358$ And as I told you before,

- NOTE Confidence: 0.80639787
- $00:14:48.360 \longrightarrow 00:14:50.730$ 1-4 dioxane could be a discharge

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

NOTE Confidence: 0.80639787

 $00:14:53.144 \longrightarrow 00:14:56.000$ the river or a lake,

NOTE Confidence: 0.80639787

 $00:14:56.000 \longrightarrow 00:14:58.364$ but also it can come from

NOTE Confidence: 0.80639787

 $00:14:58.364 \rightarrow 00:15:00.306$ our household items.

 $00:15:01.560 \rightarrow 00:15:03.808$ Well, we are going to take a short

NOTE Confidence: 0.882116662

 $00:15:03.808 \rightarrow 00:15:05.957$ break right now for a medical minute,

NOTE Confidence: 0.882116662

 $00:15:05.960 \dashrightarrow 00:15:08.319$ 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

 $00:15:10.113 \rightarrow 00:15:12.279$ 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

 $00{:}15{:}16{.}904 \dashrightarrow 00{:}15{:}18{.}903$ 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

 $00{:}15{:}20.883 \dashrightarrow 00{:}15{:}23.410$ Program provides a multispecial ty team

NOTE Confidence: 0.86050032

 $00:15:23.410 \longrightarrow 00:15:25.600$ dedicated to managing the diagnosis,

- NOTE Confidence: 0.86050032
- $00:15:25.600 \rightarrow 00:15:28.198$ evaluation, and treatment of bladder cancer.
- 00:15:32.640 --> 00:15:34.740 The American Cancer Society

 $00:15:34.740 \longrightarrow 00:15:37.084$ estimates that nearly 150,000 people

NOTE Confidence: 0.9213542

 $00:15:37.084 \rightarrow 00:15:39.758$ in the US will be diagnosed with

NOTE Confidence: 0.9213542

 $00{:}15{:}39.758 \dashrightarrow 00{:}15{:}41.717$ colorectal cancer this year alone.

NOTE Confidence: 0.9213542

 $00:15:41.720 \longrightarrow 00:15:42.928$ When detected early,

NOTE Confidence: 0.9213542

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

NOTE Confidence: 0.9213542

 $00:15:44.720 \rightarrow 00:15:46.512$ treated and highly curable,

NOTE Confidence: 0.9213542

 $00{:}15{:}46{.}520 \dashrightarrow 00{:}15{:}48{.}860$ and men and women over the age of 45

NOTE Confidence: 0.9213542

 $00{:}15{:}48.860 \dashrightarrow 00{:}15{:}50.390$ should have regular colonoscopies

NOTE Confidence: 0.9213542

 $00{:}15{:}50{.}390 \dashrightarrow 00{:}15{:}52{.}395$ to screen for the disease.

NOTE Confidence: 0.9213542

 $00{:}15{:}52{.}400 \dashrightarrow 00{:}15{:}54{.}355$ Patients with colorectal cancer have

NOTE Confidence: 0.9213542

 $00{:}15{:}54{.}355 \dashrightarrow 00{:}15{:}56{.}808$ 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

 $00{:}15{:}58{.}978 \dashrightarrow 00{:}16{:}00{.}714$ the rapies and specialized care.

NOTE Confidence: 0.9213542

 $00:16:00.720 \rightarrow 00:16:02.728$ Clinical trials are currently

- NOTE Confidence: 0.9213542
- $00:16:02.728 \rightarrow 00:16:04.736$ underway at federally designated

 $00:16:04.736 \rightarrow 00:16:06.463$ comprehensive cancer centers such

NOTE Confidence: 0.9213542

 $00{:}16{:}06{.}463 \dashrightarrow 00{:}16{:}08{.}752$ 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

 $00{:}16{:}10.890 \dashrightarrow 00{:}16{:}13.075$ 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

 $00{:}16{:}15{.}948 \dashrightarrow 00{:}16{:}17{.}860$ management of colorectal cancer

NOTE Confidence: 0.9213542

 $00:16:17.930 \longrightarrow 00:16:20.040$ by identifying the patient's most

NOTE Confidence: 0.9213542

 $00:16:20.040 \rightarrow 00:16:22.240$ likely to benefit from chemotherapy

NOTE Confidence: 0.9213542

 $00:16:22.240 \longrightarrow 00:16:24.080$ and newer targeted agents,

NOTE Confidence: 0.9213542

 $00{:}16{:}24.080 \dashrightarrow 00{:}16{:}26.918$ 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

 $00{:}16{:}29{.}320 \dashrightarrow 00{:}16{:}30{.}354$ at yale cancercenter.org.

NOTE Confidence: 0.9213542

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

NOTE Confidence: 0.9430151066666667

 $00{:}16{:}33.680 \dashrightarrow 00{:}16{:}35.798$ Welcome back to Yale Cancer Answers.

 $00:16:35.800 \rightarrow 00:16:37.666$ This is Doctor Anees Chagpar and

NOTE Confidence: 0.9430151066666667

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

NOTE Confidence: 0.9430151066666667

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

NOTE Confidence: 0.9430151066666667

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

NOTE Confidence: 0.9430151066666667

 $00:16:43.176 \longrightarrow 00:16:45.623$ carcinogens in our drinking water and

NOTE Confidence: 0.9430151066666667

 $00:16:45.623 \rightarrow 00:16:47.430$ right before the break,

NOTE Confidence: 0.9430151066666667

 $00{:}16{:}47{.}430 \dashrightarrow 00{:}16{:}49{.}530$ you had mentioned that New York

NOTE Confidence: 0.9430151066666667

 $00:16:49.530 \longrightarrow 00:16:51.553$ State is actually doing a few

NOTE Confidence: 0.9430151066666667

 $00{:}16{:}51{.}553 \dashrightarrow 00{:}16{:}53{.}371$ things that are quite innovative to

NOTE Confidence: 0.9430151066666667

 $00:16:53.371 \longrightarrow 00:16:55.762$ try to reduce the burden of these

NOTE Confidence: 0.9430151066666667

 $00{:}16{:}55{.}762 \dashrightarrow 00{:}16{:}57{.}765$ carcinogens in our drinking water.

NOTE Confidence: 0.9430151066666667

 $00{:}16{:}57.765 \dashrightarrow 00{:}17{:}01.635$ One was to establish reverse osmosis

NOTE Confidence: 0.9430151066666667

 $00{:}17{:}01.635 \dashrightarrow 00{:}17{:}05.838$ kind of at the source so that

NOTE Confidence: 0.9430151066666667

 $00{:}17{:}05{.}840 \dashrightarrow 00{:}17{:}07{.}620$ individual households don't need

NOTE Confidence: 0.9430151066666667

 $00:17:07.620 \rightarrow 00:17:10.082$ to worry about installing reverse

NOTE Confidence: 0.9430151066666667

 $00{:}17{:}10.082 \dashrightarrow 00{:}17{:}12.887$ osmosis machinery because the water

 $00:17:12.887 \longrightarrow 00:17:16.320$ has already gone through that process.

NOTE Confidence: 0.9430151066666667

 $00:17:16.320 \longrightarrow 00:17:19.020$ But the second that you mentioned

NOTE Confidence: 0.9430151066666667

 $00{:}17{:}19{.}020 \dashrightarrow 00{:}17{:}22{.}672$ was banning some of the chemicals

NOTE Confidence: 0.9430151066666667

 $00:17:22.672 \rightarrow 00:17:24.503$ that actually caused these.

NOTE Confidence: 0.9430151066666667

 $00{:}17{:}24.503 \dashrightarrow 00{:}17{:}26.789$ So you had mentioned earlier that

NOTE Confidence: 0.9430151066666667

 $00{:}17{:}26.789 \dashrightarrow 00{:}17{:}29.195$ these may be found in household items,

NOTE Confidence: 0.9430151066666667

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

NOTE Confidence: 0.9430151066666667

 $00:17:31.084 \longrightarrow 00:17:35.288$ So if we reduce the burden of these

NOTE Confidence: 0.9430151066666667

 $00{:}17{:}35.288 \dashrightarrow 00{:}17{:}37.398$ chemicals in these household items,

NOTE Confidence: 0.9430151066666667

 $00:17:37.400 \rightarrow 00:17:40.590$ then less of it gets into the wastewater,

NOTE Confidence: 0.9430151066666667

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

NOTE Confidence: 0.943015106666667

 $00{:}17{:}42.800 \dashrightarrow 00{:}17{:}45.584$ less of it actually ends up getting back

NOTE Confidence: 0.9430151066666667

 $00{:}17{:}45{.}584 \dashrightarrow 00{:}17{:}48{.}560$ to us in the form of our tap water.

NOTE Confidence: 0.9430151066666667

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

NOTE Confidence: 0.9430151066666667

 $00:17:52.112 \rightarrow 00:17:54.877$ it's great New York is doing this,

 $00:17:54.880 \longrightarrow 00:17:57.160$ but we have a global economy,

NOTE Confidence: 0.9430151066666667

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

NOTE Confidence: 0.9430151066666667

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

NOTE Confidence: 0.9430151066666667

 $00:18:02.392 \rightarrow 00:18:05.397$ and live in New York or vice versa.

NOTE Confidence: 0.9430151066666667

 $00:18:05.400 \longrightarrow 00:18:08.280$ So how effective is that going to be?

NOTE Confidence: 0.9430151066666667

 $00:18:08.280 \longrightarrow 00:18:10.775$ And is this really something

NOTE Confidence: 0.9430151066666667

 $00:18:10.775 \longrightarrow 00:18:14.120$ that should be a federal mandate,

NOTE Confidence: 0.9430151066666667

 $00:18:14.120 \rightarrow 00:18:16.248$ perhaps even a global mandate if we're

NOTE Confidence: 0.9430151066666667

 $00:18:16.248 \rightarrow 00:18:18.528$ going to get particular about it in

NOTE Confidence: 0.9430151066666667

 $00:18:18.528 \rightarrow 00:18:20.958$ terms of really having an effect on

NOTE Confidence: 0.9430151066666667

 $00:18:20.958 \rightarrow 00:18:23.358$ reducing these chemicals in the environment?

NOTE Confidence: 0.9703887516666667

 $00{:}18{:}24.040 \dashrightarrow 00{:}18{:}26.100$ That is a very good question, but

NOTE Confidence: 0.9703887516666667

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

NOTE Confidence: 0.9703887516666667

 $00:18:28.680 \longrightarrow 00:18:30.840$ to address that because when

NOTE Confidence: 0.9703887516666667

 $00{:}18{:}30{.}840 \dashrightarrow 00{:}18{:}33{.}862$ you start talking for economical impacts

NOTE Confidence: 0.9703887516666667

 $00:18:33.862 \rightarrow 00:18:36.598$ and stuff like that is very difficult to

- NOTE Confidence: 0.9703887516666667
- $00:18:36.598 \rightarrow 00:18:39.040$ regulate for different countries and so on.
- NOTE Confidence: 0.9703887516666667
- $00{:}18{:}39{.}040 \dashrightarrow 00{:}18{:}43{.}760$ But I think many states are trying to
- NOTE Confidence: 0.9703887516666667
- 00:18:43.760 --> 00:18:45.720 mimic what New York State did,
- NOTE Confidence: 0.9703887516666667
- $00:18:45.720 \rightarrow 00:18:48.308$ especially in the case of 1.4 dioxin.
- NOTE Confidence: 0.9703887516666667
- $00:18:48.308 \longrightarrow 00:18:50.478$ Also many of the states,
- NOTE Confidence: 0.9703887516666667
- $00:18:50.480 \longrightarrow 00:18:52.484$ at least in United States and
- NOTE Confidence: 0.9703887516666667
- $00:18:52.484 \rightarrow 00:18:54.879$ actually maybeall over the world,
- NOTE Confidence: 0.970388751666667
- $00:18:54.880 \rightarrow 00:18:57.520$ they're very concerned about the PFAS.
- NOTE Confidence: 0.9703887516666667
- $00{:}18{:}57{.}520 \dashrightarrow 00{:}18{:}59{.}725$ But there are some other chemicals
- NOTE Confidence: 0.970388751666667
- $00:18:59.725 \longrightarrow 00:19:01.941$ that might be present in our water
- NOTE Confidence: 0.970388751666667
- $00:19:01.941 \longrightarrow 00:19:03.759$ that could be of concern.
- NOTE Confidence: 0.970388751666667
- $00{:}19{:}03.760 \dashrightarrow 00{:}19{:}06.580$ And those are what we call
- NOTE Confidence: 0.9703887516666667
- $00{:}19{:}06{.}580 \dashrightarrow 00{:}19{:}07{.}520$ the trichloromethanes
- NOTE Confidence: 0.970388751666667
- $00{:}19{:}07{.}520 \dashrightarrow 00{:}19{:}09{.}900$ which are formed as a byproduct of
- NOTE Confidence: 0.970388751666667
- $00{:}19{:}09{.}900 \dashrightarrow 00{:}19{:}11{.}903$ chlorine we use for disinfection
- NOTE Confidence: 0.970388751666667

 $00:19:11.903 \longrightarrow 00:19:13.719$ to disinfect the water.

NOTE Confidence: 0.970388751666667

 $00:19:13.720 \longrightarrow 00:19:16.045$ And when chlorine reacts

NOTE Confidence: 0.970388751666667

 $00:19:16.045 \longrightarrow 00:19:17.440$ with organic matter,

NOTE Confidence: 0.970388751666667

 $00:19:17.440 \longrightarrow 00:19:21.040$ it creates a strike and trichloromethanes

NOTE Confidence: 0.970388751666667

 $00:19:21.040 \longrightarrow 00:19:24.240$ have been associated with

NOTE Confidence: 0.9703887516666667

00:19:24.240 $\operatorname{-->}$ 00:19:26.708 increase risk of bladder cancer

NOTE Confidence: 0.970388751666667

 $00:19:26.708 \dashrightarrow 00:19:28.993$ and possibly with colon cancer.

NOTE Confidence: 0.970388751666667

 $00:19:29.000 \longrightarrow 00:19:30.492$ In addition to that,

NOTE Confidence: 0.9703887516666667

 $00{:}19{:}30{.}492 \dashrightarrow 00{:}19{:}32{.}730$ remember that we also have a rsenic

NOTE Confidence: 0.9703887516666667

 $00:19:32.805 \longrightarrow 00:19:34.637$ contamination of the water.

NOTE Confidence: 0.970388751666667

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

 $00:19:38.465 \rightarrow 00:19:40.355$ could be an environmental pollutant,

NOTE Confidence: 0.9703887516666667

 $00{:}19{:}40{.}360 \dashrightarrow 00{:}19{:}43{.}600$ but also it occurs naturally in some areas

NOTE Confidence: 0.9703887516666667

 $00:19:43.600 \rightarrow 00:19:47.520$ and it may contaminate the groundwater.

NOTE Confidence: 0.9703887516666667

 $00:19:47.520 \rightarrow 00:19:51.840$ So it is very important to monitor our water.

NOTE Confidence: 0.970388751666667

 $00:20:00.280 \longrightarrow 00:20:01.576$ Municipals are doing that.

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

NOTE Confidence: 0.9703887516666667

 $00{:}20{:}02{.}872 \dashrightarrow 00{:}20{:}04{.}336$ of the drinking water.

NOTE Confidence: 0.9703887516666667

 $00:20:04.336 \rightarrow 00:20:07.600$ So they are protecting the people there.

NOTE Confidence: 0.970388751666667

 $00{:}20{:}07.600 \dashrightarrow 00{:}20{:}11.040$ Now for the PFAS it starts to become federal

NOTE Confidence: 0.970388751666667

 $00{:}20{:}11.040 \dashrightarrow 00{:}20{:}13.356$ law that there have to be limits on that.

NOTE Confidence: 0.9703887516666667

 $00:20:13.360 \longrightarrow 00:20:15.322$ So they're going to follow on

NOTE Confidence: 0.9703887516666667

 $00:20:15.322 \longrightarrow 00:20:17.000$ that particular limit as well.

NOTE Confidence: 0.970388751666667

 $00:20:17.000 \rightarrow 00:20:20.438$ So reducing the exposure is 1,

NOTE Confidence: 0.970388751666667

 $00{:}20{:}20{.}440 \dashrightarrow 00{:}20{:}22{.}918$ detecting the exposure is a second,

NOTE Confidence: 0.9703887516666667

 $00{:}20{:}22{.}920 \dashrightarrow 00{:}20{:}25{.}425$ and also mitigating the contaminants

NOTE Confidence: 0.970388751666667

 $00{:}20{:}25{.}425 \dashrightarrow 00{:}20{:}28{.}844$ from our drinking water is the third.

NOTE Confidence: 0.9703887516666667

 $00:20:28.844 \rightarrow 00:20:31.600$ That's what everybody is trying to do.

NOTE Confidence: 0.9703887516666667

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

NOTE Confidence: 0.9703887516666667

 $00:20:33.696 \rightarrow 00:20:35.683$ success and this is how we're going

NOTE Confidence: 0.970388751666667

 $00:20:35.683 \rightarrow 00:20:37.640$ to promote a better well-being.

NOTE Confidence: 0.90034969

 $00:20:38.840 \longrightarrow 00:20:41.126$ The question that

 $00:20:41.126 \longrightarrow 00:20:44.416$ 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

 $00:20:46.820 \longrightarrow 00:20:50.048$ does that rest primarily with

NOTE Confidence: 0.90034969

 $00{:}20{:}50.048 \dashrightarrow 00{:}20{:}52.560$ the individual household or with

NOTE Confidence: 0.90034969

 $00:20:52.560 \rightarrow 00:20:54.160$ the state or federal government?

NOTE Confidence: 0.90034969

 $00{:}20{:}54.160 \dashrightarrow 00{:}20{:}58.354$ 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

 $00{:}21{:}01{.}943 \dashrightarrow 00{:}21{:}04.658$ 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

 $00{:}21{:}07{.}480 \dashrightarrow 00{:}21{:}09{.}460$ I mean, there's a whole issue

NOTE Confidence: 0.90034969

 $00{:}21{:}09{.}460 \dashrightarrow 00{:}21{:}11{.}695$ about bottled water and the plastic

NOTE Confidence: 0.90034969

 $00{:}21{:}11.695 \dashrightarrow 00{:}21{:}13.395$ contaminants that that causes.

NOTE Confidence: 0.90034969

 $00{:}21{:}13.400 \dashrightarrow 00{:}21{:}15.906$ Or is this really something that should

NOTE Confidence: 0.90034969

 $00:21:15.906 \rightarrow 00:21:18.958$ be at the state or federal level,

NOTE Confidence: 0.90034969

 $00:21:18.960 \longrightarrow 00:21:22.272$ or municipality level even where the

 $00:21:22.272 \rightarrow 00:21:25.445$ 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

 $00:21:29.040 \rightarrow 00:21:31.736$ they'll do the filtering, etcetera.

NOTE Confidence: 0.90034969

 $00{:}21{:}31{.}736 \dashrightarrow 00{:}21{:}33{.}400$ So that

NOTE Confidence: 0.90034969

 $00{:}21{:}33{.}400 \dashrightarrow 00{:}21{:}35{.}283$ I can know that the water that's

NOTE Confidence: 0.90034969

 $00:21:35.283 \rightarrow 00:21:37.558$ coming out of my tap is safe to drink.

NOTE Confidence: 0.90034969

 $00:21:37.560 \longrightarrow 00:21:39.450$ And shouldn't that be part of

NOTE Confidence: 0.90034969

 $00:21:39.450 \longrightarrow 00:21:41.480$ what we all pay taxes for?

NOTE Confidence: 0.7992781666666667

 $00{:}21{:}41.760 \dashrightarrow 00{:}21{:}44.063$ It is, and you're

NOTE Confidence: 0.7992781666666667

 $00:21:44.063 \rightarrow 00:21:46.040$ talking about the public water.

NOTE Confidence: 0.7992781666666667

 $00{:}21{:}46.040 \dashrightarrow 00{:}21{:}49.040$ So yes, municipal, state and everything.

NOTE Confidence: 0.7992781666666667

 $00:21:49.040 \rightarrow 00:21:51.320$ They're responsible for checking the water,

NOTE Confidence: 0.7992781666666667

 $00:21:51.320 \longrightarrow 00:21:52.530$ for cleaning the water and

NOTE Confidence: 0.7992781666666667

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

NOTE Confidence: 0.7992781666666667

 $00:21:54.120 \longrightarrow 00:21:56.916$ the extent that they can.

NOTE Confidence: 0.7992781666666667

 $00:21:56.920 \rightarrow 00:21:59.195$ Now the problem is with private wells.

- NOTE Confidence: 0.7992781666666667
- 00:21:59.200 --> 00:22:00.796 In private wells, as you know,
- NOTE Confidence: 0.7992781666666667
- $00{:}22{:}00{.}800 \dashrightarrow 00{:}22{:}05{.}108$ they're not under federal regulations,
- NOTE Confidence: 0.7992781666666667
- $00:22:05.108 \longrightarrow 00:22:07.478$ they're not under state regulations.
- NOTE Confidence: 0.7992781666666667
- $00:22:07.480 \longrightarrow 00:22:10.548$ So it's up to the people that they have their
- NOTE Confidence: 0.7992781666666667
- $00:22:10.548 \rightarrow 00:22:13.080$ private wells to check their water level.
- NOTE Confidence: 0.7992781666666667
- 00:22:13.080 --> 00:22:13.899 And for example,
- NOTE Confidence: 0.7992781666666667
- 00:22:13.899 00:22:16.204 I can tell you some of the houses
- NOTE Confidence: 0.7992781666666667
- $00{:}22{:}16{.}204 \dashrightarrow 00{:}22{:}18{.}148$ that we have in Madison
- NOTE Confidence: 0.7992781666666667
- $00:22:18.148 \longrightarrow 00:22:20.080$ that might have radon also
- NOTE Confidence: 0.7992781666666667
- 00:22:20.080 --> 00:22:23.195 in their drinking water, or uranium,
- NOTE Confidence: 0.7992781666666667
- 00:22:23.200 --> 00:22:24.652 it's naturally occurring things.
- NOTE Confidence: 0.7992781666666667
- $00{:}22{:}24.652 \dashrightarrow 00{:}22{:}27.745$ So it is up to the individuals that
- NOTE Confidence: 0.7992781666666667
- $00:22:27.745 \longrightarrow 00:22:30.265$ they have the households
- NOTE Confidence: 0.7992781666666667
- $00{:}22{:}30{.}265 \dashrightarrow 00{:}22{:}32{.}959$ that they have the private wells checked.
- $00:22:38.360 \longrightarrow 00:22:40.968$ So that at least makes me feel
- NOTE Confidence: 0.955318601304348
- $00:22:40.968 \longrightarrow 00:22:44.280$ better in the sense that those who do get

 $00:22:44.280 \rightarrow 00:22:46.879$ their drinking water from public sources,

NOTE Confidence: 0.955318601304348

 $00{:}22{:}46.880 \dashrightarrow 00{:}22{:}49.106$ 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

 $00:22:52.040 \rightarrow 00:22:54.637$ 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

 $00:22:57.184 \rightarrow 00:22:59.933$ is for people who get their water

NOTE Confidence: 0.955318601304348

 $00:22:59.933 \rightarrow 00:23:02.400$ from private well water that they

NOTE Confidence: 0.955318601304348

 $00{:}23{:}02{.}400 \dashrightarrow 00{:}23{:}04{.}885$ need to take those extra steps to

NOTE Confidence: 0.955318601304348

 $00{:}23{:}04.885 \dashrightarrow 00{:}23{:}07.288$ make sure that they're drinking clean

NOTE Confidence: 0.955318601304348

 $00:23:07.288 \longrightarrow 00:23:09.398$ and safe and healthy water.

NOTE Confidence: 0.955318601304348

 $00:23:09.400 \longrightarrow 00:23:10.000$ 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

 $00:23:12.120 \longrightarrow 00:23:13.480$ it right very correctly.

NOTE Confidence: 0.975002

 $00:23:13.720 \longrightarrow 00:23:15.196$ The other question that I have,

NOTE Confidence: 0.975002

 $00:23:15.200 \longrightarrow 00:23:16.248$ you mentioned that the

- $00:23:16.248 \rightarrow 00:23:17.558$ 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
- $00:23:20.936 \rightarrow 00:23:23.238$ these carcinogens and purifying.
- NOTE Confidence: 0.975002
- $00:23:23.240 \longrightarrow 00:23:26.048$ Yet you mentioned that not all
- NOTE Confidence: 0.975002
- $00{:}23{:}26.048 \dashrightarrow 00{:}23{:}29.006$ states have invested in things like
- NOTE Confidence: 0.975002
- $00{:}23{:}29{.}006 \dashrightarrow 00{:}23{:}31{.}994$ 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
- $00:23:34.320 \longrightarrow 00:23:36.000$ and this is just a guess,
- NOTE Confidence: 0.975002
- $00{:}23{:}36{.}000 \dashrightarrow 00{:}23{:}38{.}580$ that the efforts that individual states
- NOTE Confidence: 0.975002
- $00{:}23{:}38{.}580 \dashrightarrow 00{:}23{:}41{.}582$ may take in terms of the investment
- NOTE Confidence: 0.975002
- $00{:}23{:}41.582 \dashrightarrow 00{:}23{:}44.382$ 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
- $00{:}23{:}47.600 \dashrightarrow 00{:}23{:}49.680$ perhaps along political lines.
- NOTE Confidence: 0.975002
- 00:23:49.680 --> 00:23:51.267 So, you know,
- NOTE Confidence: 0.975002
- $00{:}23{:}51{.}267 \dashrightarrow 00{:}23{:}56{.}359$ is drinking water in a red state like Texas,
- NOTE Confidence: 0.975002
- $00:23:56.360 \rightarrow 00:23:58.680$ for example,

- NOTE Confidence: 0.975002
- $00:23:58.680 \rightarrow 00:24:01.193$ 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: 0.8687486666666667
- 00:24:06.880 --> 00:24:08.770 I think what it comes
- NOTE Confidence: 0.8687486666666667
- $00:24:08.770 \longrightarrow 00:24:10.638$ down to it's not opinion,
- NOTE Confidence: 0.8687486666666667
- 00:24:10.640 --> 00:24:12.516 it's not blue or red state
- NOTE Confidence: 0.8687486666666667
- $00:24:12.516 \longrightarrow 00:24:14.440$ if there is a contamination.
- NOTE Confidence: 0.8687486666666667
- $00:24:14.440 \rightarrow 00:24:16.324$ For example, in Florida,
- NOTE Confidence: 0.8687486666666667
- $00{:}24{:}16{.}324 \dashrightarrow 00{:}24{:}18{.}679$ there was a factory which was the
- NOTE Confidence: 0.8687486666666667
- $00:24:18.679 \rightarrow 00:24:20.559$ contaminating source,
- NOTE Confidence: 0.8687486666666667
- $00{:}24{:}20{.}560 \dashrightarrow 00{:}24{:}23{.}199$ in the water in the lake and everything.
- NOTE Confidence: 0.8687486666666667
- $00{:}24{:}23{.}200 \dashrightarrow 00{:}24{:}26{.}976$ So the federal
- NOTE Confidence: 0.8687486666666667
- 00:24:26.976 --> 00:24:29.516 regulation is if you contaminate,
- NOTE Confidence: 0.8687486666666667
- $00{:}24{:}29{.}520 \dashrightarrow 00{:}24{:}32{.}076$ you're responsible to clean the area.
- NOTE Confidence: 0.8687486666666667
- $00{:}24{:}32.080 \dashrightarrow 00{:}24{:}34.918$ So the federal agency makes the
- NOTE Confidence: 0.8687486666666667

 $00:24:34.918 \longrightarrow 00:24:38.577$ company pay for getting all the

NOTE Confidence: 0.8687486666666667

 $00{:}24{:}38{.}577 \dashrightarrow 00{:}24{:}41{.}357$ chemicals secured out of the

NOTE Confidence: 0.8687486666666667

 $00:24:41.360 \longrightarrow 00:24:42.820$ environment and

NOTE Confidence: 0.8687486666666667

 $00:24:42.820 \rightarrow 00:24:43.915$ protecting the people.

NOTE Confidence: 0.8687486666666667

 $00{:}24{:}43{.}920 \dashrightarrow 00{:}24{:}47{.}680$ So I think what the states are trying to do,

NOTE Confidence: 0.8687486666666667

 $00:24:47.680 \longrightarrow 00:24:51.800$ especially the EPA,

NOTE Confidence: 0.8687486666666667

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

NOTE Confidence: 0.8687486666666667

 $00:24:54.400 \rightarrow 00:24:56.280$ and is doing a very good job

NOTE Confidence: 0.8687486666666667

 $00{:}24{:}56{.}280 \dashrightarrow 00{:}24{:}57{.}280$ in terms of that.

NOTE Confidence: 0.8687486666666667

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

NOTE Confidence: 0.8687486666666667

 $00{:}24{:}58{.}839 \dashrightarrow 00{:}25{:}00{.}883$ that you have a little bit more

NOTE Confidence: 0.8687486666666667

 $00{:}25{:}00{.}883 \dashrightarrow 00{:}25{:}02{.}597$ contamination there that it's up to the

NOTE Confidence: 0.8687486666666667

 $00{:}25{:}02{.}600 \dashrightarrow 00{:}25{:}04{.}060$ municipalities and

NOTE Confidence: 0.8687486666666667

 $00:25:04.060 \longrightarrow 00:25:05.520$ everything to follow up.

NOTE Confidence: 0.8687486666666667

 $00:25:05.520 \dashrightarrow 00:25:08.878$ And I can assure you with my experience,

NOTE Confidence: 0.8687486666666667

 $00{:}25{:}08.878 \dashrightarrow 00{:}25{:}11.513$ especially with Florida and Ann Arbor,

- NOTE Confidence: 0.8687486666666667
- $00:25:11.513 \rightarrow 00:25:14.110$ there are people working both from the
- NOTE Confidence: 0.8687486666666667
- $00:25:14.188 \rightarrow 00:25:17.000$ communities also with the EPA,
- NOTE Confidence: 0.8687486666666667
- $00:25:17.000 \rightarrow 00:25:19.772$ the Environmental Protection Agency,
- NOTE Confidence: 0.8687486666666667
- $00{:}25{:}19.772 \dashrightarrow 00{:}25{:}23.237$ and also the state regulators
- NOTE Confidence: 0.8687486666666667
- $00:25:23.240 \longrightarrow 00:25:26.760$ 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
- $00:25:28.760 \longrightarrow 00:25:30.384$ however, that
- NOTE Confidence: 0.961828158333333
- $00:25:30.384 \rightarrow 00:25:32.008$ particularly with the ubiquity
- NOTE Confidence: 0.961828158333333
- $00:25:32.008 \rightarrow 00:25:33.914$ 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
- $00:25:36.280 \longrightarrow 00:25:37.258$ they're in detergents,
- NOTE Confidence: 0.961828158333333
- $00{:}25{:}37{.}258 \dashrightarrow 00{:}25{:}39{.}383$ they're in carpet, they're in clothing.
- NOTE Confidence: 0.961828158333333
- $00:25:39.383 \longrightarrow 00:25:41.669$ It's going to be very difficult
- NOTE Confidence: 0.961828158333333
- $00{:}25{:}41.669 \dashrightarrow 00{:}25{:}43.561$ to identify particular companies
- NOTE Confidence: 0.961828158333333
- $00{:}25{:}43{.}561 \dashrightarrow 00{:}25{:}46{.}429$ that you can say you're responsible
- NOTE Confidence: 0.961828158333333

 $00:25:46.429 \longrightarrow 00:25:48.719$ for contaminating this water,

NOTE Confidence: 0.961828158333333

 $00:25:48.720 \longrightarrow 00:25:50.880$ therefore you need to pay

NOTE Confidence: 0.961828158333333

 $00{:}25{:}50{.}880 \dashrightarrow 00{:}25{:}52{.}400$ 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

 $00:25:55.280 \longrightarrow 00:25:57.600$ of a ubiquitous fed accompli.

 $00:25:59.400 \longrightarrow 00:26:02.248$ Yes and no.

 $00:26:05.440 \longrightarrow 00:26:08.408$ If you look at all the literature

NOTE Confidence: 0.924195973529412

 $00:26:08.408 \longrightarrow 00:26:11.800$ 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

 $00{:}26{:}15.019 \dashrightarrow 00{:}26{:}18.567$ to purify the waters from the PFAS all

NOTE Confidence: 0.924195973529412

 $00:26:18.567 \rightarrow 00:26:21.556$ over the country and also in Florida,

NOTE Confidence: 0.924195973529412

 $00:26:21.560 \longrightarrow 00:26:23.640$ for example,

NOTE Confidence: 0.924195973529412

 $00:26:23.640 \longrightarrow 00:26:25.432$ once you find the company

NOTE Confidence: 0.924195973529412

 $00{:}26{:}25{.}432 \dashrightarrow 00{:}26{:}27{.}159$ that has caused the contamination,

NOTE Confidence: 0.924195973529412

 $00{:}26{:}27.160 \dashrightarrow 00{:}26{:}28.994$ then they're responsible to clean it up.

NOTE Confidence: 0.924195973529412

 $00{:}26{:}29{.}000 \dashrightarrow 00{:}26{:}31{.}240$ 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
- $00:26:35.775 \longrightarrow 00:26:39.262$ that that would be enough of a

 $00:26:39.262 \longrightarrow 00:26:41.536$ deterrent for companies to do

NOTE Confidence: 0.768663472

 $00:26:41.536 \longrightarrow 00:26:43.756$ their own self regulation

NOTE Confidence: 0.768663472

 $00:26:43.760 \longrightarrow 00:26:46.784$ 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

 $00{:}26{:}48.800 \dashrightarrow 00{:}26{:}51.680$ Although it seems like New York felt that

NOTE Confidence: 0.768663472

 $00:26:51.680 \rightarrow 00:26:54.837$ a ban was actually needed as well.

NOTE Confidence: 0.768663472

 $00:26:54.840 \longrightarrow 00:26:57.879$ Yes, yes, indeed.

NOTE Confidence: 0.768663472

 $00{:}26{:}57{.}880 \dashrightarrow 00{:}27{:}00{.}379$ Now you had mentioned during the break

NOTE Confidence: 0.768663472

 $00{:}27{:}00{.}379 \dashrightarrow 00{:}27{:}03{.}872$ that some of these ideas were

NOTE Confidence: 0.768663472

 $00:27:03.872 \rightarrow 00:27:05.752$ 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

 $00:27:06.887 \longrightarrow 00:27:07.840$ little bit more about that?

NOTE Confidence: 0.8893379666666667

 $00{:}27{:}07{.}920 \dashrightarrow 00{:}27{:}09{.}144$ Yes, fire fighters are exposed

NOTE Confidence: 0.8893379666666667

 $00{:}27{:}11.772 \dashrightarrow 00{:}27{:}13.784$ to several chemicals including

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

NOTE Confidence: 0.8893379666666667

00:27:15.680 --> 00:27:18.620 benzene, formaldehyde, as
bestos,

NOTE Confidence: 0.8893379666666667

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

NOTE Confidence: 0.8893379666666667

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

NOTE Confidence: 0.8893379666666667

 $00{:}27{:}25.040 \dashrightarrow 00{:}27{:}27.916$ using this what we call AFFF

NOTE Confidence: 0.8893379666666667

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

NOTE Confidence: 0.8893379666666667

 $00{:}27{:}30{.}440 \dashrightarrow 00{:}27{:}32{.}881$ as the IQUS in firefighting foams.

NOTE Confidence: 0.8893379666666667

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

NOTE Confidence: 0.8893379666666667

 $00:27:35.320 \longrightarrow 00:27:39.080$ the fire down. And this is all PFAS.

NOTE Confidence: 0.8893379666666667

 $00{:}27{:}39{.}080 \dashrightarrow 00{:}27{:}41{.}156$ And the studies have shown

NOTE Confidence: 0.8893379666666667

 $00{:}27{:}41.156 \dashrightarrow 00{:}27{:}44.132$ so far that the fire fighters have

NOTE Confidence: 0.8893379666666667

 $00:27:44.132 \rightarrow 00:27:46.576$ significantly elevated PFAS in their

NOTE Confidence: 0.8893379666666667

 $00:27:46.576 \longrightarrow 00:27:48.136$ blood compared to

NOTE Confidence: 0.8893379666666667

 $00:27:48.136 \longrightarrow 00:27:49.560$ the other populations.

NOTE Confidence: 0.8893379666666667

 $00{:}27{:}49.560 \dashrightarrow 00{:}27{:}52.260$ Now we all have PFAS in our blood

NOTE Confidence: 0.8893379666666667

 $00:27:52.260 \rightarrow 00:27:54.475$ because we're all exposed to the PFAS.

- NOTE Confidence: 0.8893379666666667
- $00:27:54.480 \longrightarrow 00:27:55.435$ That doesn't mean that we're

 $00:27:55.435 \rightarrow 00:27:56.199$ going to get sick,

NOTE Confidence: 0.8893379666666667

 $00{:}27{:}56{.}200 \dashrightarrow 00{:}27{:}59{.}672$ but the fire fighters have a little bit

NOTE Confidence: 0.8893379666666667

 $00{:}27{:}59.672 \dashrightarrow 00{:}28{:}02.888$ higher levels and this is a concern.

NOTE Confidence: 0.8893379666666667

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

NOTE Confidence: 0.8893379666666667

 $00{:}28{:}03{.}320 \dashrightarrow 00{:}28{:}06{.}158$ there is no epidemiological study yet,

NOTE Confidence: 0.8893379666666667

 $00:28:06.160 \longrightarrow 00:28:08.589$ although we say it may increase the

NOTE Confidence: 0.8893379666666667

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

NOTE Confidence: 0.8893379666666667

 $00{:}28{:}10.880 \dashrightarrow 00{:}28{:}12.240$ but there are not epidemiological

NOTE Confidence: 0.8893379666666667

 $00:28:12.240 \longrightarrow 00:28:13.600$ studies to confirm that.

NOTE Confidence: 0.8893379666666667

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

NOTE Confidence: 0.8893379666666667

 $00{:}28{:}17.880 \dashrightarrow 00{:}28{:}19.440$ And for the fire fighters,

NOTE Confidence: 0.8893379666666667

 $00:28:19.440 \longrightarrow 00:28:22.292$ it's very important to have

NOTE Confidence: 0.8893379666666667

 $00{:}28{:}22{.}292 \dashrightarrow 00{:}28{:}24{.}536$ this protective gear that they will

 $00{:}28{:}25{.}160 \dashrightarrow 00{:}28{:}27{.}182$ breathe clean air and

NOTE Confidence: 0.8893379666666667

 $00{:}28{:}27.182 \dashrightarrow 00{:}28{:}29.399$ be protected from the exposure

- NOTE Confidence: 0.8893379666666667
- $00:28:29.399 \longrightarrow 00:28:30.599$ to these chemicals.
- NOTE Confidence: 0.842985168695652
- $00{:}28{:}31{.}200 \dashrightarrow 00{:}28{:}33{.}450$ 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
- $00{:}28{:}37{.}587 \dashrightarrow 00{:}28{:}40{.}519$ Sciences at the Yale School of Medicine.
- NOTE Confidence: 0.842985168695652
- $00:28:40.520 \longrightarrow 00:28:42.576$ If you have questions,
- NOTE Confidence: 0.842985168695652
- $00{:}28{:}42.576 \dashrightarrow 00{:}28{:}44.578$ the address is canceranswers@yale.edu
- NOTE Confidence: 0.842985168695652
- $00{:}28{:}44{.}578 \dashrightarrow 00{:}28{:}47{.}326$ and past editions of the program
- NOTE Confidence: 0.842985168695652
- $00{:}28{:}47{.}326 \dashrightarrow 00{:}28{:}49{.}722$ are available in audio and written
- NOTE Confidence: 0.842985168695652
- $00:28:49.722 \rightarrow 00:28:50.654$ form at yalecancercenter.org.
- NOTE Confidence: 0.842985168695652
- $00{:}28{:}50{.}654 \dashrightarrow 00{:}28{:}53{.}300$ We hope you'll join us next time to learn
- NOTE Confidence: 0.842985168695652
- $00{:}28{:}53{.}355 \dashrightarrow 00{:}28{:}55{.}035$ more about the fight against cancer.
- NOTE Confidence: 0.842985168695652
- $00{:}28{:}55{.}040 \dashrightarrow 00{:}28{:}57{.}584$ Funding for Yale Cancer Answers is
- NOTE Confidence: 0.842985168695652
- $00{:}28{:}57{.}584 \dashrightarrow 00{:}29{:}00{.}000$ provided by Smilow Cancer Hospital.