

1 then we're going to here from
2 Dr. Tsou next. And then after
3 that will be Peter Winslow and
4 David Kinney.

5 Okay, sir. When you are
6 ready, please.

7 DR. TSOU:

8 Thank you. My name is
9 Dr. Walter Tsou. I'm the
10 executive director of
11 Philadelphia PSR and a former
12 health commissioner of
13 Philadelphia. Because time is
14 short, I will simply allow
15 others to explain why we should
16 have a complete ban in the
17 Delaware River Watershed for
18 fracking.

19 My brief comments
20 concern around potential
21 spillage of produced flow-back
22 for what's in the Delaware
23 River. As a public health
24 physician, I draw your
25 attention to the known and

1 unknown harmful effects
2 introduced from fracking waste.
3 As noted by others, as much as
4 5 to 10 million gallons of
5 water are laced with 50 to 100
6 different chemicals, which are
7 used to create fracking fluid.
8 The flow back backwater not
9 only contains these chemicals,
10 but also brine and highly
11 radioactive materials like
12 Radium 226. The risk to the
13 produced water in the Delaware
14 River is simply unthinkable.

15 Yellow Researcher last
16 year published an article that
17 identified over 1,000 chemicals
18 used in fracking, of which 76
19 percent of the chemicals have
20 not been studied for toxicity.

21 Of the 240 substances
22 that were known to have
23 toxicity, at least 55 of them
24 were carcinogens. Twenty (20)
25 were known to increase the risk

1 of leukemia. Forty-three (43)
2 percent were known to have
3 reproductive toxicity. Forty
4 (40) percent developmental
5 toxicity. And 17 percent
6 affected both a developing
7 fetus or a woman's reproductive
8 health.

9 Many of these chemicals
10 act independently with
11 structures where even a
12 nanogram, that is to say one
13 part in one billion, could
14 block or stimulate the receptor
15 site, or affect field growth,
16 or our hormonal systems.

17 Because pregnancy is
18 limited to nine months, we can
19 measure exposure with
20 literature on fracturing and
21 compare it to growth outcomes.
22 Two reports that were done
23 recently last year showed that
24 the proximity of growth near
25 gas wells were associated with

1 neonatal health outcomes.

2 In Texas, they geocoded
3 159,000 birth records and found
4 a 14 percent increase in
5 pre-term birth and fetal
6 deaths.

7 In Pennsylvania, they
8 geocoded 1.1 million babies
9 born proximal to the active gas
10 wells based on the select date
11 of those wells. And if you
12 lived within one kilometer of
13 any of those active wells, you
14 had a 25 percent increased
15 chance of having low birth
16 weight babies.

17 Two other studies are
18 worth noting. At Hopkins
19 Newburg School of Public
20 Health, they analyzed 35,000
21 cases from the Geisinger Health
22 System and found a 40 percent
23 increase of premature birth.
24 And these large numbers all
25 suggest that these are highly

1 statistically significant
2 studies.

3 The fact that actually
4 the State of Pennsylvania or
5 the federal government has not
6 funded any health study in this
7 country is an abomination.

8 In short, there is
9 growing evidence that fracking
10 is bad for health. The civic
11 duty in --- will show that
12 there are 1,300 articles on the
13 adverse effects of health from
14 fracking. If you allow
15 fracking for anywhere in the
16 Delaware Watershed, you will
17 have committed a public health
18 disaster.

19 HEARING OFFICER:

20 Okay. The next speaker
21 will be Peter Winslow. And
22 then on deck, will be David
23 Kinney and Sylvia Metzler. And
24 this is Peter Winslow?

25 MR. WINSLOW: