



INFORMATION ABOUT AIR EXPOSURES FROM ABEX/REMCO, 1963 – 1995

(updated)

From 1963 – 1995, a chemical called “hexavalent chromium” got into the outdoor air when chrome plating was done at the Abex/Remco company in Willits. Breathing this chemical can cause certain health problems, including cancer.

The Abex/Remco site (called “Remco” in this fact sheet) is located at 934 South Main Street in Willits. Remco was a machine shop that was in business from 1940 to 1995. In 1963, Remco started chrome plating. Whenever Remco did chrome plating, chemicals got into the outdoor air. Anyone living or working in the Willits area during the time that chrome plating was being done could have breathed these chemicals.

Because community members were worried that the chemicals from Remco could have harmed their health, the Environmental Health Investigations Branch (EHIB) of the

California Department of Health Services, did a public health assessment (PHA). The PHA was done to find out if the chemicals could have harmed the health of Willits residents and workers and to find out if the chemicals could harm them now or in the future. EHIB looked at the main chemical that people would have breathed. This chemical is “hexavalent chromium.” Breathing large amounts of hexavalent chromium over time can cause health problems including lung cancer, asthma, bronchitis, bloody nose, and kidney problems. (For more information about hexavalent chromium, see page 2.)

This fact sheet gives you information about the effect that breathing the hexavalent chromium from Remco could have on the health of people who lived or worked in the Willits area. (It does not include information specifically for people who worked at Remco.) This fact sheet also includes information about the work that EHIB did, the recommendations EHIB made to protect the community’s health, and the next steps we will take.

What is a Public Health Assessment?

A public health assessment (PHA) is a way to find out if and how chemicals at a hazardous waste site harm the health of people that live and work nearby. A PHA is also done to find out if chemicals could have harmed people in the past. When we do a PHA, we look at:

- information about the chemicals at the site
- the health of the residents and workers in the area
- other information about the site

We also talk to community members about their health. All this information is used to find out what needs to be done to protect the health of people in the community.

This fact sheet is a summary of the PHA about how much hexavalent chromium got into the outdoor air when Remco did chrome plating. EHIB gave the public a full report about the PHA in July 2003 and asked for their comments. This fact sheet and the final PHA report include changes from the earlier public comment draft PHA report.

How did we find out if chemicals from Remco could have harmed the health of Willits residents and workers?

To find out if the chemicals from Remco could have harmed the health of Willits residents and workers, we needed to know how much hexavalent chromium they breathed over the years. To know how much was breathed, we needed to know how much hexavalent chromium was in the air during the years Remco did chrome plating.

We used estimates of how much hexavalent chromium was in the air

There is no information about how much hexavalent chromium was in the air that Willits residents and workers may have breathed, so we had to use estimates. (To find out about how the estimates were made, see page 2.)

Information About Hexavalent Chromium

Scientists have done studies about people who work with hexavalent chromium. In these studies, they looked at how much, and for how long, the workers breathed the hexavalent chromium, and the types of health problems the workers had. We know from these studies that breathing large amounts of hexavalent chromium over a long period of time can cause health problems including asthma, bronchitis, and bloody nose and other nose problems. It can also cause stomach pain and irritation, problems with the reproductive system (mostly in men), problems with certain parts of the kidney, and cancer. Lung cancer is usually the type of cancer caused by breathing hexavalent chromium. It is possible that breathing hexavalent chromium may also cause other cancers, like nasal and stomach cancer.

We looked at different areas of Willits

We used estimates of how much hexavalent chromium would have been in the air in different areas of Willits. This is because the amount of hexavalent chromium in the air would not have been the same for all areas in Willits. In general, the farther away from Remco that a person lived or worked, the less hexavalent chromium they would have breathed. This is because there would have been less hexavalent chromium in the air due to wind and weather.

We looked at different time periods

We used estimates of how much hexavalent chromium would have been in the air for three different time periods. This is because the amount of hexavalent chromium would have been different for each of those time periods. The three time periods are:

- 1963 – 1975: During this time period, the largest amount of hexavalent chromium would have been in the air because Remco started chrome plating in 1963 and they did not use equipment that would have helped keep hexavalent chromium from getting into the outdoor air.
- 1976 – 1989: In 1976, Remco started using equipment that helped keep some of the hexavalent chromium from getting into the outdoor air. This means that there would have been less hexavalent chromium in the air after 1975.
- 1990 – 1995: In 1990, Remco started using even better equipment, so even less hexavalent chromium got into the outdoor air.
- 1995: Remco closed.

We looked at health information about hexavalent chromium

To figure out if the health of Willits residents and workers could have been harmed, EHIB used the estimates for the different areas of Willits and the three different time periods to figure out how much hexavalent chromium residents and workers could have breathed. We also figured out how much they could have breathed if they lived or worked in Willits the whole time (1963 – 1995). Then we compared this information with what is known about hexavalent chromium to figure out if the health of Willits residents and workers could have been harmed. We looked at information about cancer and other kinds of health problems that a person could get from breathing hexavalent chromium.

What did we find out?

Whether a person's health was harmed by breathing hexavalent chromium from Remco depends in part on how much they breathed and for how long. It also depends on other things, such as their age, how healthy their diet is, whether they have unhealthy habits like smoking, and how good their general health is. We cannot tell if someone will have health problems. We can only tell whether it is possible that someone could get sick from breathing the estimated amounts of hexavalent chromium.

People living and working in different areas of Willits, and during different time periods, would have breathed different amounts of hexavalent chromium. People who breathed more hexavalent chromium probably would be more likely to have health problems from the chemical than someone

How Estimates of Hexavalent Chromium Were Made

During the years that Remco did chrome plating, they were not required by law to measure the amount of hexavalent chromium that got into outdoor air. Without this information, there is no way to know for certain how much hexavalent chromium Willits residents and workers breathed. However, Remco did keep records on the type of equipment used, and in 1989, there were some measurements of hexavalent chromium taken at Remco during chrome plating operations. With this information and information about the weather patterns in Willits, we were able to use a computer to estimate or "air model" how much hexavalent chromium would have been in the air throughout the Willits area. From this, we estimated how much hexavalent chromium Willits residents and workers could have breathed.

who breathed less hexavalent chromium. In some cases, the amount of hexavalent chromium that Willits residents (adults and children) and workers breathed was high enough to possibly cause some health problems. In general, the less time residents or workers spent in the Willits area and the farther from Remco they lived or worked, the less likely it would be for them to have health problems from breathing the hexavalent chromium. Also, children in the Willits area are more likely than adults to have health problems from breathing hexavalent chromium.

How do I find out about possible health problems from breathing the hexavalent chromium from Remco?

To find out about possible health problems from breathing the hexavalent chromium:

1. Look at the three maps of the Willits area (maps A, B, and C) on pages 6, 7, and 8. There is one map for each of the three time periods. (All the maps show how the streets looked in 2001, even though the streets may have been different in the past.) If you want to know about an area not shown on the maps, call Tivo Rojas at EHIB, at (510) 622-4492. You can call him collect at (510) 622-4500.
2. Find the map for the time period that you want to know about.
3. Each map shows the different areas (zones) in Willits. Each zone has a number. Pick the number of the zone you want to know about.
4. Go to the section called, "Information about health problems other than cancer," on this page. Look for the map and zone number you picked. You will find health information for the amount of hexavalent chromium in the map and zone you picked.
5. Go to the section called, "Information about cancer," on page 4 for cancer information. *You will still need to use the maps and find zones to get information about cancer.*

Information about health problems other than cancer

Some people who lived or worked in Willits when Remco did chrome plating could have breathed enough hexavalent chromium to cause health problems other than cancer. (For information about health problems from breathing hexavalent chromium, see the "Information about Hexavalent Chromium" section on page 2.) This would depend on where and when they lived or worked in Willits, and whether they were a child or an adult, or someone who might be more sensitive to hexavalent chromium (such as seniors or people with certain illnesses).

Map A — 1963 – 1975:

Zones 1 – 6:

- Both adults and children could have developed certain health problems from the hexavalent chromium.

Zone 7:

- Adults would not have developed health problems from the hexavalent chromium.
- Children could have developed certain health problems from the hexavalent chromium.

Map B — 1976 to 1989:

Zone 1:

- Both adults and children could have developed certain health problems from the hexavalent chromium.

Zones 2 – 5:

- Adults would not have developed health problems from the hexavalent chromium.
- Children could have developed certain health problems from the hexavalent chromium.

Zones 6-7:

- Neither adults nor children would have developed health problems from the hexavalent chromium.

Map C — 1990 – 1995:

Zones 1-7:

- Neither adults nor children would have developed health problems from the hexavalent chromium.

Information about cancer

Cancer is a common disease. Every person has some risk of getting cancer and there is no way to know if or when a person will get cancer. "Lifetime cancer risk" is a measure of how likely a person is to get cancer. In California, the lifetime cancer risk is about 43%. This means that about 43 people out of every 100 will be told they have cancer at some point in their life.

There are many things that can make a person's cancer risk higher. This includes breathing chemicals (like hexavalent chromium) that can cause cancer. If you breathed large amounts of a chemical that causes cancer, your lifetime cancer risk would be higher than the typical lifetime cancer risk. A risk of getting cancer that is higher than the typical lifetime cancer risk is called an "increased lifetime cancer risk." For people who live in California, this means a cancer risk that is higher than 43%. For example, suppose a community has an increased lifetime cancer risk of "1 in 100" because they breathed a chemical that can cause

cancer. This means that it is possible that 1 extra person could get cancer (44 instead of 43) for every 100 people who breathed the chemical.

We cannot tell if someone will get cancer. But we can estimate how much a community's lifetime cancer risk would go up. The estimates of the increased lifetime cancer risk are used to figure out what steps need to be taken to help the community. They are not the actual number of people who will get cancer and are only estimates of what could happen. The actual risk could be much lower and as low as zero.

We estimated "increased lifetime cancer risk"

We estimated increased lifetime cancer risk from breathing amounts of hexavalent chromium estimated for the Willits area. We made estimates for each zone during the two earliest time periods and for the entire 32 years that Remco did chrome plating. Table 1 and Table 2 shows the estimated increased lifetime risks for people living in the Willits area, and for people who worked in the area.

To find out the increased lifetime cancer risk for a place, time period and group:

1. Look at Map A and Map B and find the map for the time period you want to know about.
2. Look at Table 1 for Map A and Table 2 for Map B; find the zone you want to know about.
3. Look to the right of the zone number in the tables under "Willits Residents" or "Willits Workers" to find the increased lifetime cancer risk for each group

Example: To find the increased lifetime cancer risk for people who lived in Willits in Zone 3, between 1963–1975:

1. Look at Map A and find the zone you want to know about. *You would pick Zone 3.*
2. Look at Table 1 and find the zone you want to know about. *You would pick Zone 3.*
3. Look to the right of the zone number under "Willits Residents," or "Willits Workers" to find the increased cancer risk for each group. *You would look under "Willits Residents" and find an increased lifetime cancer risk of "1 in 100". This means that for every 100 people in Zone 3, it is possible that 1 extra person could get cancer from breathing the hexavalent chromium. The actual risk could be much lower and as low as zero.*

Table 1: Increased Lifetime Cancer Risks (1963 – 1975)

Zone	Willits Residents	Willits Workers
1	1 in 10	4 in 100
2	6 in 100	2 in 100
3	1 in 100	4 in 1,000
4	8 in 1,000	3 in 1,000
5	6 in 1,000	2 in 1,000
6	1 in 1,000	4 in 10,000
7	6 in 10,000	2 in 10,000

Table 2: Increased Lifetime Cancer Risks (1976 – 1989)

Zone	Willits Residents	Willits Workers
1	6 in 1,000	2 in 1,000
2	3 in 1,000	1 in 1,000
3	2 in 1,000	7 in 10,000
4	2 in 1,000	5 in 10,000
5	6 in 10,000	2 in 10,000
6	2 in 10,000	5 in 100,000
7	9 in 100,000	3 in 100,000

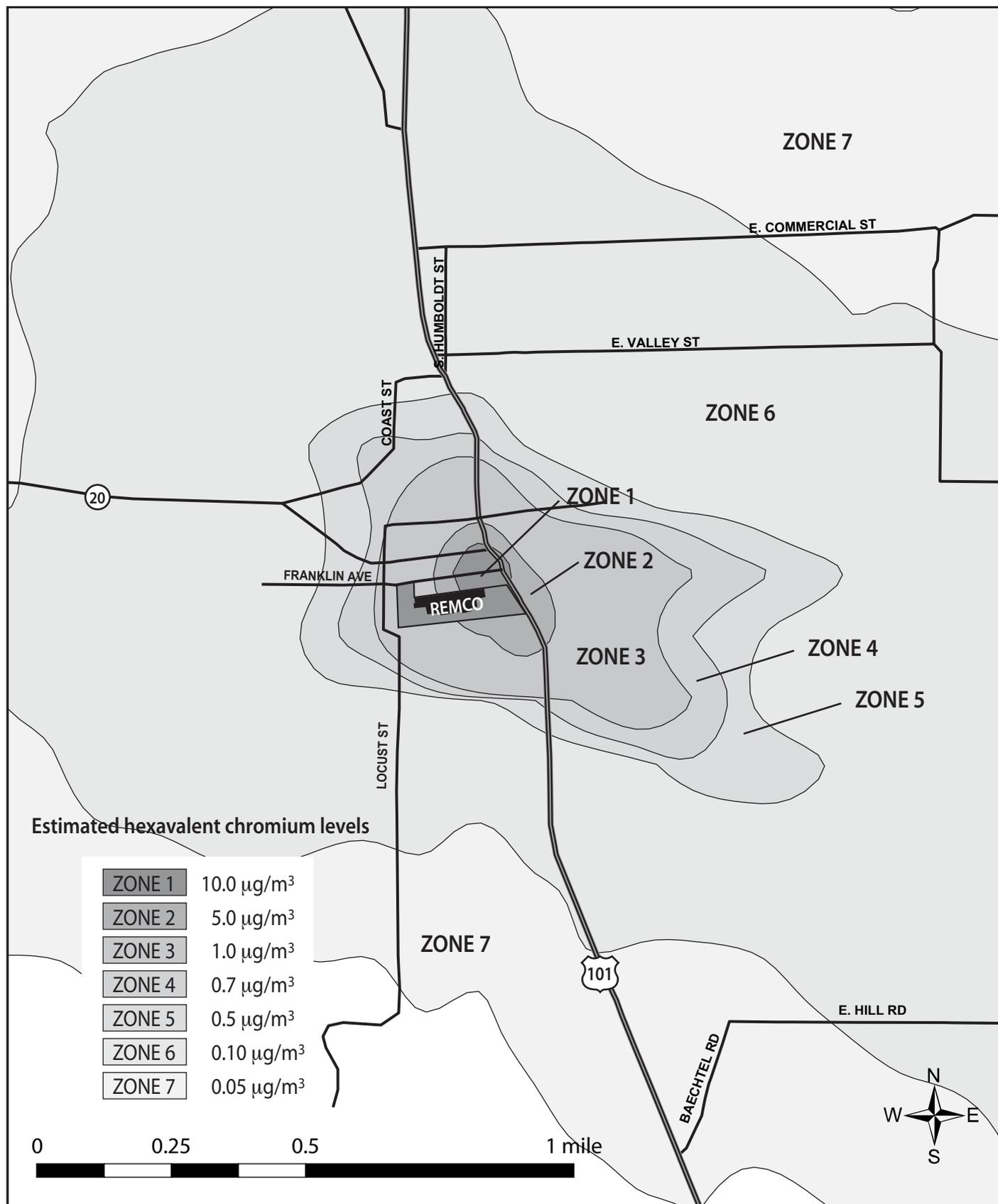
Note: If a person lived or worked in the same place in Willits from 1963–1995, the entire 32 years Remco did chrome plating, their increased lifetime cancer risk would be about the same as the risks shown in Table 1, using Map A.

We did a "cancer review"

We did a "cancer review," to get more information about cancer in the Willits area, and to help us decide what steps we should take next. In a cancer review, we look at existing cancer information. We compare the actual number of people who got cancer in a given community to the number we would expect to get cancer in similar communities. A cancer review can only be helpful if we find that the number of people who got cancer is much higher than the number of people we would expect.

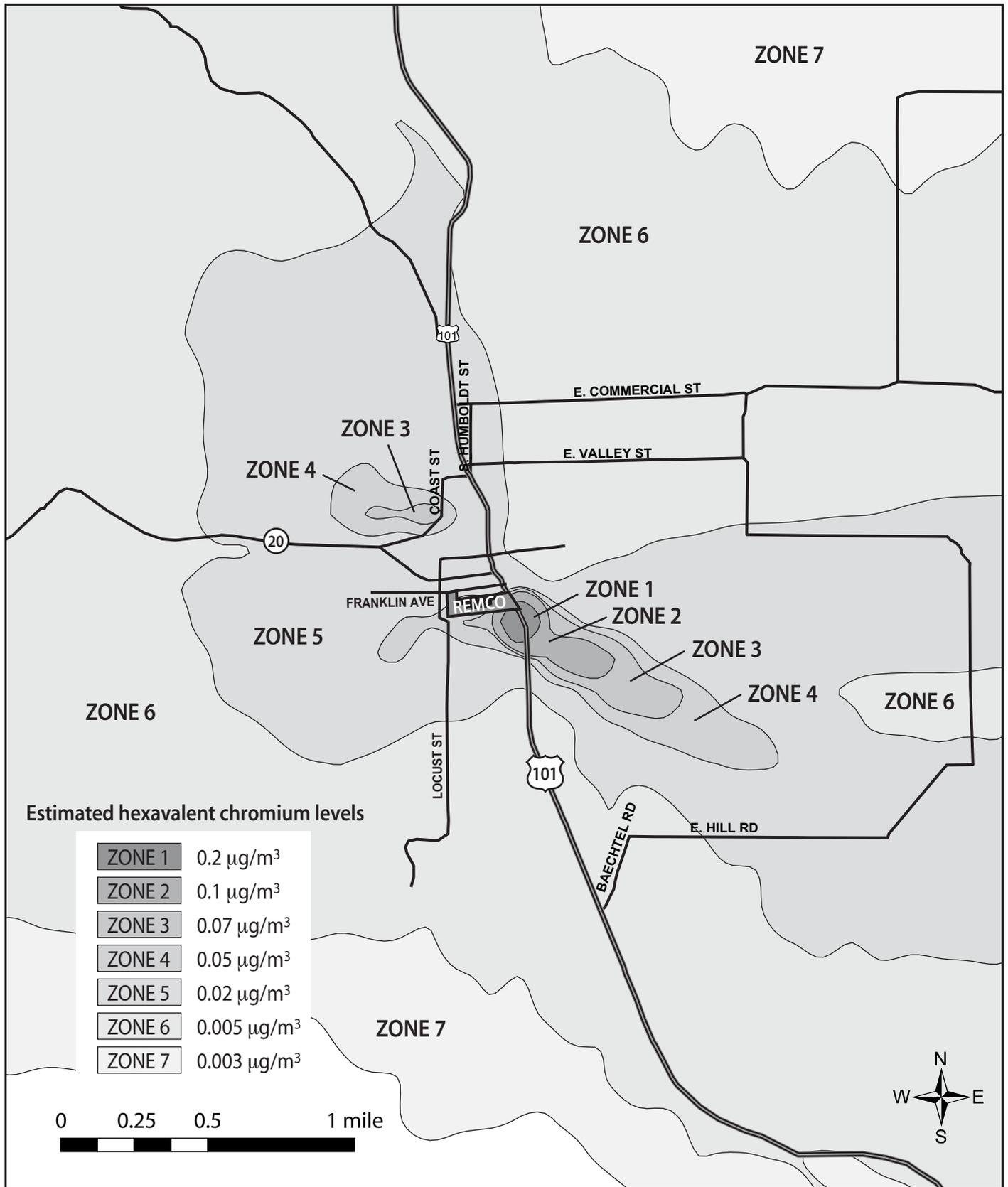
We looked at the actual number of people living in the Willits area who were told between 1988 and 2000 that they had cancer. We looked at all cancers in general, as well as those that people could get specifically from breathing hexavalent chromium, like lung cancer. We found that the number of people with cancer, including lung cancer, was about what we would expect to see in similar places in California. We did not see a large enough difference to tell us if it is likely that some of these cancers were caused by breathing the hexavalent chromium, although this is possible.

Map A: Zones for 1963 – 1975

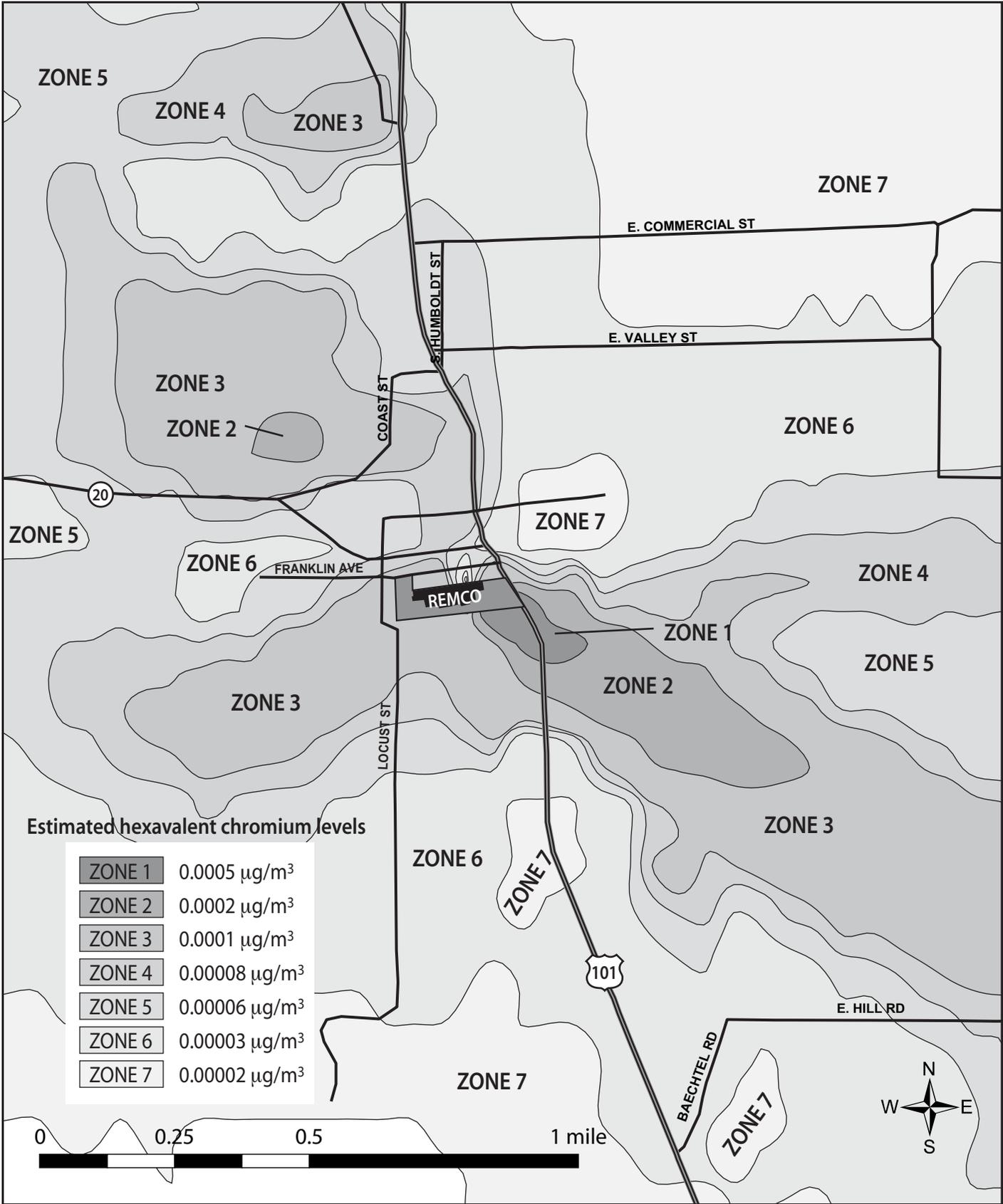


Note: Contours representative of 1968 – 1975; estimated concentrations between 1963 – 1967 not shown but are reflected in the cancer risk evaluation for the entire time period (1963 – 1975).

Map B: Zones for 1976 – 1989



Map C: Zones for 1990 – 1995



What Steps Should Be Taken to Help the Community?

We recommend the following steps be considered:

- Find out about the health of people who may have breathed in harmful amounts of hexavalent chromium from Remco by doing medical exams and tests, and asking people questions about their health — a group of medical experts, scientist, and community members should help make decisions about this activity
- Counseling to help people who are very worried or have a lot of stress about Remco and their health or their family's health
- Make sure that hexavalent chromium in the dust and soil at the Remco site does not get into the air when work is being done at the site

What is Planned Next?

The following actions are planned to serve Willits residents:

- Work with other government agencies and others to make sure that the recommended steps are followed
- Train medical staff in the area about health problems caused by breathing hexavalent chromium
- Continue providing health information and education to Willits residents
- Do a PHA that looks at all chemicals from or at the Remco site

Where Can I Get the Full PHA Report?

If you want to read the complete public health assessment report, you can get a copy at the reference desk of the Willits Public Library or on-line at www.ehib.org. You can also get a copy by calling Tracy Barreau at (510) 620-3670, or e-mailing her at tbarreau@dhs.ca.gov. You can call her collect at (510) 620-3620.