

THE “ERIN BROCKOVICH EFFECT”: HOW MEDIA SHAPES TOXICS POLICY

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I. INTRODUCTION

Looking back on this past century, several events stand out as pivotal turning points in environmental toxics policy. These events helped shape the evolving realm of toxics policy and guided the direction that it would take in the future. Undoubtedly included among these policy-shaping events are Rachel Carson’s 1962 publication of *Silent Spring* and the 1978 events at Love Canal.¹ *Silent Spring* helped launch the environmental movement and spurred a nation to question its role in altering the environment through chemical means.² The toxic catastrophe of Love Canal gripped the nation, as it became the first man-made disaster to be designated as a federal emergency.³

Few would question the importance of these two events in the timeline of the environmental movement. However, why did these events have a profound and lasting impact on toxics policy? *Silent Spring* and Love Canal became pivotal in shaping toxics policy because each environmental event had both a real-world impact and mass media appeal. The media attention garnered by each of these events led to national awareness and concern for the toxics issue involved. Consequently, policy makers developed environmental toxics policies to respond to the public’s heightened concern.

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¹ In 1978 the New York neighborhood of Love Canal became contaminated with toxic waste when chemicals from an old dumpsite began seeping into residential basements and schoolyards. See Andrew J. Hoffman, *An uneasy rebirth at Love Canal*, Helen Dwight Reid Educational Foundation Environment, Mar. 13, 1995, at Vol. 37, No. 2, p.4, available at <http://www.lexis.com>.

² Hillary Mayell, *Environmental Movement at 40: Is Earth Healthier?* NAT’L GEOGRAPHIC NEWS, Apr. 19, 2002, at http://www.news.nationalgeographic.com/news/2002/0419_020419_rachelcarson.html (*Silent Spring* “is widely credited with launching today’s environmental movement.”).

³ President of the United States Jimmy Carter declared Love Canal a federal emergency on August 7, 1978. See Love Canal Collection: Background on the Love Canal, Univ. Archives, Univ. Libraries, State Univ. of N.Y. at Buffalo, at http://www.ublib.buffalo.edu/libraries/projects/lovecanal/background_lovecanal.html (last modified Oct. 17, 2001).

Yet years from now, a seemingly unconventional event may be included with these other policy-shaping events—namely the movie *Erin Brockovich*.⁴ Based on a true story, *Erin Brockovich* dealt with how one company contaminated a small Californian desert town's water supply with chromium 6.⁵ At first glance some may question whether a movie could have any legitimate effect on toxics policy. Change, however, can and does come through alternative vessels. Many parallels can be drawn between the impact of *Erin Brockovich* on toxics policy and the other policy-shaping events.

This paper will explore how and why *Erin Brockovich* may someday be included with *Silent Spring* and Love Canal as a major event that shaped toxics policy, specifically the regulation of chromium 6. This paper will also focus on the unfolding debate in Glendale, California, regarding the safety of its water supply. Finally, this paper will examine the steps that policy makers continue to take in response to the public's concern regarding the toxicity of chromium 6 in their drinking water.

II. HISTORY OF INTERPLAY BETWEEN PUBLICITY AND TOXICS POLICY

A. *Silent Spring*

Rachel Carson's *Silent Spring* awakened a nation to the detrimental health and environmental consequences of DDT (dichloro-diphenyl-trichloro-ethane). The title for *Silent Spring* came from the book's apocalyptic vision of the long-term ecosystem destruction caused by indiscriminate spraying.⁶ "There was once a town in the heart of America where all life seemed to live in harmony with its surroundings . . . Then a strange blight crept over the area and everything began to change . . . There was a strange stillness . . . The few birds seen anywhere were moribund; they trembled violently and could not fly. It was a spring without voices. On the morning that had once throbbled with the dawn chorus of scores of bird voices there was now no sound; only silence lay over the

⁴ Directed by Steven Soderbergh and starring Julia Roberts, *Erin Brockovich* was based on the true story of how one company contaminated a small Californian desert town's water supply with chromium 6. ERIN BROCKOVICH (Universal Studios Mar. 2000); see eg. Andrew Gumbel, *This Woman is at a Film Premiere, but She is Not a Film Star*, INDEP. (London), Apr. 1, 2000, Features at 1, available at, <http://www.lexis.com>.

⁵ *Id.*

⁶ Jonathan N. Leonard, *Rachel Carson Dies of Cancer: 'Silent Spring' Author was 56*, N.Y. TIMES, Apr. 15, 1964, at <http://www.nytimes.com/books/97/10/05/reviews/carson-obit.html>.

fields and woods and marsh."⁷ *Silent Spring* warned mainstream America about the dangers of DDT, a persistent, toxic chemical that would threaten public health and the environment for years to come.⁸ The book outlined how DDT disrupts the natural ecological balance by accumulating in the food chain and harming non-target organisms such as birds, fish, and perhaps even humans.⁹

DDT became the pesticide of choice for agriculture after its first mass use in World War II.¹⁰ Following the 1945 approval of DDT for civilian use, farmers frequently applied the chemical, already known to be toxic, throughout the country.¹¹ Over the next thirty years, approximately 1.35 billion pounds of DDT was used domestically.¹²

As early as the mid-1940's, scientists began warning people about the possible effects of DDT.¹³ Not until, *Silent Spring*, however, did the general public become aware of the risk. *Silent Spring* had an immediate and profound impact on public opinion regarding DDT. On its publication date, September 27, 1962, Rachel Carson's book sold 40,000 advance copies and the Book of the Month Club ordered up another 150,000.¹⁴ Growing more popular over time, *Silent Spring* remained a bestseller for a year. The book was eventually translated into many languages and has enjoyed ongoing success as a foundational environmental text.¹⁵ *Silent Spring's* message, however, has not gone unchallenged.

The chemical industry vehemently opposed *Silent Spring*, spending more than \$250,000 in a publicity campaign against Carson and her book.¹⁶ The Monsanto Company, one of the nation's largest chemical

⁷ Peter Matthiessen, *Rachel Carson*, TIME MAG., at <http://www.time.com/time/time100/scientist/profile/carson.html> (quoting Rachel Carson, *SILENT SPRING*, Houghton Mifflin, Riverside Press, 1962).

⁸ See generally Rachel Carson, *SILENT SPRING*, Houghton Mifflin, Riverside Press, 1962.

⁹ *Id.*

¹⁰ Excerpt from *DDT, A Review of Scientific and Economic Aspects of the Decision To Ban Its Use as a Pesticide*, prepared for the Committee on Appropriations of the U.S. House of Representatives by EPA, (July 1975), (EPA-540/1-75-022), available at <http://www.epa.gov/history/topics/ddt/02.htm> (last modified May 01, 2002).

¹¹ Toxic Chemicals & Health: Pesticides: In brief History, at <http://www.nrdc.org/health/pesticides/hcarson.asp> (last modified Apr. 16, 1997).

¹² Excerpt from *DDT, A Review of Scientific and Economic Aspects of the Decision To Ban Its Use as a Pesticide*, prepared for the Committee on Appropriations of the U.S. House of Representatives by EPA, July 1975, EPA-540/1-75-022, available at <http://www.epa.gov/history/topics/ddt/02.htm> (last modified May 01, 2002).

¹³ *Id.*

¹⁴ Dorothy McLaughlin, *Silent Spring Revisited*, at <http://www.pbs.org/wgbh/pages/frontline/shows/nature/disrupt/sspring.html> (last visited Apr. 27, 2002).

¹⁵ A Science Odyssey: People and Discoveries: Rachel Carson, at <http://www.pbs.org/wgbh/aso/databank/entries/btcars.html> (last visited Apr. 27, 2002).

¹⁶ *Environmental Truths*, COLUM. JOURNALISM REV., at <http://www.cjr.org/year/01/6/1962.asp> (last visited Apr. 27, 2002).

concerns, distributed a parody of *Silent Spring* entitled “*The Desolate Year*.”¹⁷ The chemical industry’s counterattack described a desperate world plagued with famine, disease, and overrun by insects due to the banning of pesticides.¹⁸ A spokesman for the industry claimed, “if man were to follow the teachings of Ms. Carson, we would return to the Dark Ages, and the insects and diseases and vermin would once again inherit the earth.”¹⁹

Notwithstanding the chemical industry’s criticism of *Silent Spring*, the book affected DDT use within the United States. In the early 1970’s, application of DDT declined drastically from a peak of approximately 80 million pounds per year in 1959 to just 12 million pounds domestically.²⁰ One of the reasons for this decline was the increasing public concern about the environmental and health effects of DDT.²¹ During this same period, a group of scientists seeking a complete ban on DDT founded the Environmental Defense Fund, which has remained one of the leading environmental organizations in the country to this day.²²

Silent Spring also sparked an immediate political reaction. On August 29, 1962 President John F. Kennedy announced that Federal agencies were going to take a closer look at the pesticide problem outlined in *Silent Spring*.²³ On May 15, 1963 the President’s Science Advisory Committee released a report containing recommendations for the use and regulation of pesticides in the United States.²⁴ The advisory report, entitled “The Use of Pesticides,” recommended the decreased use of toxic chemicals and, when chemicals were used, they should be less persistent in the environment.²⁵ The report also cited *Silent Spring*, noting that—

¹⁷ Jonathan N. Leonard, *Rachel Carson Dies of Cancer: ‘Silent Spring’ Author was 56*, N.Y. TIMES, Apr. 15, 1964, <http://www.nytimes.com/books/97/10/05/reviews/carson-obit.html>.

¹⁸ *Id.*

¹⁹ Statement by Dr. Robert White-Stevens, a former biochemist and assistant director of the Agricultural Research Division of American, *quoted in*, Dorothy McLaughlin, *Silent Spring Revisited*, at <http://www.pbs.org/wgbh/pages/frontline/shows/nature/disrupt/sspring.html> (last visited Apr. 27, 2002).

²⁰ Excerpt from *DDT, A Review of Scientific and Economic Aspects of the Decision To Ban Its Use as a Pesticide*, prepared for the Committee on Appropriations of the U.S. House of Representatives by EPA, July 1975, EPA-540/1-75-022, *available at* <http://www.epa.gov/history/topics/ddt/02.htm> (last modified May 01, 2002).

²¹ *Id.*

²² ROBERT V. PERCIVAL ET AL., ENVIRONMENTAL REGULATION: LAW, SCIENCE, AND POLICY 280 (2ND ED. 1996).

²³ Dorothy McLaughlin, *Silent Spring Revisited*, at <http://www.pbs.org/wgbh/pages/frontline/shows/nature/disrupt/sspring.html> (last visited Apr. 27, 2002).

²⁴ President’s Science Advisory Committee, *Use of Pesticides* (1963).

²⁵ Dorothy McLaughlin, *Silent Spring Revisited*, at <http://www.pbs.org/wgbh/pages/frontline/shows/nature/disrupt/sspring.html> (last visited Apr. 27, 2002).

"until the publication of *Silent Spring*, people were generally unaware of the toxicity of pesticides."²⁶

The growing public concern and scientific evidence regarding the environmental effects of DDT eventually led the United States Environmental Protection Agency (EPA), established in 1970, to take action to ban DDT. On June 14, 1972, EPA announced the final cancellation of all remaining crop uses of DDT in the U.S.²⁷ DDT was the first pesticide banned by EPA.²⁸

To this day, some groups oppose *Silent Spring's* message and the banning of DDT.²⁹ In May of 1997 the American Council on Science and Health (ACSH) published *Facts Versus Fears: A Review of the Greatest Unfounded Health Scares of Recent Times*, which criticizes the banning of DDT.³⁰ Founded by a group of scientists in 1978, ACSH claims to be "a consumer education consortium concerned with issues related to food, nutrition, chemicals, pharmaceuticals, lifestyle, the environment and health."³¹ ACSH asserts that *Silent Spring* was "scientifically flawed" and argues that there is insufficient scientific evidence to support the banning of DDT.³²

Admirers and critics of Carson, however, concede that the publication of *Silent Spring* marked a pivotal moment in the development of the modern environmental movement and toxics policy. *Silent Spring* ranked as one of the top news stories of the last century, selected as the 57th most important news event by journalists and scholars in the Newseum's list of the 20th Century's top 100 stories.³³ U.S. News listed Carson as one of the "25 Makers of the American Century."³⁴ Time Magazine included Carson as one the top 20 "Most Influential Scientists

²⁶ *Id.*

²⁷ Consolidated DDT Hearings: Opinions and Order of the Administrator, 37 Fed. Reg. 13,369 (1972).

²⁸ People and Profiles: The Power of One, (June 8, 2000) at http://www.epa.gov/epahome/people2_0608.htm (last modified Mar. 19, 2002).

²⁹ Adam J. Lieberman & Simona C. Kwon M.P.H., *Facts Versus Fears: A Review of the Greatest Unfounded Health Scares of Recent Times*, American Council on Science and Health (3d. ed. 1998), available at <http://www.acsh.org/publications/reports/facts3.pdf>.

³⁰ *Id.*

³¹ A group of scientists founded the American Council on Science and Health in 1978. American Council on Science and Health, *About ACSH*, available at <http://www.acsh.org/about/index.html> (last visited on Apr. 27, 2002).

³² *Id.*

³³ *Id.*

³⁴ U.S. News, *25 Makers of the American Century*, at <http://www.usnews.com/usnews/news/991227/makers.htm> (last visited Mar. 10, 2003).

and Thinkers of the 20th Century,”³⁵ despite having first questioned the book’s accuracy and validity in a 1962 review.³⁶

One of *Silent Spring’s* lasting effects is that it brought into the consciousness of the public and the government the notion that no chemical should be assumed “safe.” *Silent Spring* helped shape toxics policy because the potential health effects of DDT addressed in *Silent Spring* left people questioning the safety of the environment around them. It had a real-world impact because at the time of *Silent Spring’s* publication few people were immune from coming in contact with the DDT-tainted environment. The subsequent debate and media attention surrounding *Silent Spring* further fueled the public’s awareness of the potential environmental and health problems DDT created. This convergence of factors helped ignite the environmental movement, shape toxics policy, and led to EPA’s banning of DDT.

B. Love Canal

A second milestone in the evolution of toxics policy was the tragedy of Love Canal. Love Canal told the cautionary tale of what can happen when industries that pollute are unregulated. The original Love Canal site consisted of a 16-acre parcel of land located in the City of Niagara Falls, New York.³⁷ In the 1890’s, entrepreneur William T. Love began constructing the canal to provide cheap hydroelectric power for his industrial “city of the future.”³⁸ When Love’s plan fell through in 1942, the Hooker Chemicals and Plastics Corporation (acquired by Occidental Chemical Corp. in 1968) purchased the site.³⁹ Hooker used the site as its primary dumping ground for toxic chemicals from its Niagara Falls plant until 1953,⁴⁰ dumping over 21,000 tons of at least 200 different chemicals at the site.⁴¹

³⁵ Peter Matthiessen, *Rachel Carson*, TIME MAG., available at <http://www.time.com/time/time100/scientist/profile/carson.html> (last visited Apr. 27, 2002).

³⁶ Hillary Mayell, *Environmental Movement at 40: Is Earth Healthier?* NAT’L GEOGRAPHIC NEWS, Apr. 19, 2002, at http://www.news.nationalgeographic.com/news/2002/0419_020419_rachelcarson.html.

³⁷ *United States v. Hooker Chemical & Plastics Corp.*, 850 F. Supp. 993 (W.D.N.Y. 1994).

³⁸ Andrew J. Hoffman, *An uneasy rebirth at Love Canal*, Helen Dwight Reid Educational Foundation Environment, Mar. 13, 1995, at Vol. 37, No. 2, p.4, available at <http://www.lexis.com>.

³⁹ *Id.*

⁴⁰ *United States v. Hooker Chemical & Plastics Corp.*, 850 F. Supp. 993 (W.D.N.Y. 1994).

⁴¹ Andrew J. Hoffman, *An uneasy rebirth at Love Canal*, Helen Dwight Reid Educational Foundation Environment, Mar. 13, 1995, at Vol. 37, No. 2, p.4, available at <http://www.lexis.com>.

In 1953, with the landfill at maximum capacity,⁴² Hooker covered the wastes with a protective clay cap.⁴³ The Niagara Falls Board of Education purchased the site from Hooker for \$1 despite the company's warnings that hazardous chemicals were buried at the site.⁴⁴ Shortly thereafter, construction began on 100 homes with an elementary school to be built on the center of the landfill.⁴⁵ During this time Hooker continued to dump fly ash at the site for a period of one year.⁴⁶ Prospective homeowners, however, were not warned about the potential health hazards connected with the site.⁴⁷ Homeowners began to flock to the developing residential community of Love Canal, unaware of the toxic sludge that lay beneath their homes, schools, and parks.

Health problems began almost immediately, when toxic wastes were exposed during the development of the site.⁴⁸ For two decades chemicals migrated to the surface of Love Canal.⁴⁹ Although area residents repeatedly complained of odors and mysterious "substances" surfacing in their yards, the City merely covered the substances with dirt or clay.⁵⁰ By the late 1970's, many residents of this primarily working-class neighborhood became increasingly concerned with the inexplicable health effects of living in Love Canal.⁵¹ For example, numerous children in the area required treatment for face and eye burns caused by exposure to the toxic chemicals.⁵²

In 1978, the tragedy finally received national attention when, following heavy rains, a "chemical soup" began seeping to the surface of Love Canal, invading the backyards, basements and schoolyards of Love Canal

⁴² Love Canal Collection: Background on the Love Canal, Univ. Archives, Univ. Libraries, State Univ. of N.Y. at Buffalo, at http://www.ublib.buffalo.edu/libraries/projects/lovecanal/background_lovecanal.html (last modified Oct. 17, 2001).

⁴³ Andrew J. Hoffman, *An uneasy rebirth at Love Canal*, Helen Dwight Reid Educational Foundation Environment, Mar. 13, 1995, at Vol. 37, No. 2, p.4, available at <http://www.lexis.com>.

⁴⁴ *Id.*

⁴⁵ *Id.*

⁴⁶ *United States v. Hooker Chemical & Plastics Corp.*, 850 F. Supp. 993 (W.D.N.Y. 1994).

⁴⁷ Love Canal Collection: Background on the Love Canal, Univ. Archives, Univ. Libraries, State Univ. of N.Y. at Buffalo, at http://www.ublib.buffalo.edu/libraries/projects/lovecanal/background_lovecanal.html (last modified Oct. 17, 2001).

⁴⁸ *United States v. Hooker Chemical & Plastics Corp.*, 850 F. Supp. 993 (W.D.N.Y. 1994).

⁴⁹ Federal Environmental Superfund Records, Love Canal, Sept. 26, 1988, available at <http://www.westlaw.com>.

⁵⁰ Love Canal Collection: Background on the Love Canal, Univ. Archives, Univ. Libraries, State Univ. of N.Y. at Buffalo, at http://www.ublib.buffalo.edu/libraries/projects/lovecanal/background_lovecanal.html (last modified Oct. 17, 2001).

⁵¹ *Id.*

⁵² *United States v. Hooker Chemical & Plastics Corp.*, 850 F. Supp. 993 (W.D.N.Y. 1994).

residents.⁵³ At the time, roughly 7,400 residents lived on top of or adjacent to the toxic disaster of Love Canal.⁵⁴ The New York State Health Department investigated and discovered high rates of birth defects, miscarriages, epilepsy, and, liver abnormalities, as well as incidences of sores, rectal bleeding, and headaches.⁵⁵ A series of newspaper articles written by the Niagara Gazette further highlighted for the nation the toxic tragedy unfolding in Love Canal.⁵⁶ Clearly Love Canal could no longer be ignored.

On August 7, 1978, President Jimmy Carter declared Love Canal a federal emergency—the nation's first federal emergency for a non-natural environmental disaster.⁵⁷ Subsequent media attention surrounding Love Canal became a major factor in Congressional passage of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).⁵⁸ Love Canal and the media attention “propelled the problems of inadequate hazardous chemical waste disposal into the national spotlight.”⁵⁹

The legislative history of CERCLA expressly mentions the incidents at Love Canal at several points.⁶⁰ Furthermore, in addressing the Committee on the Environment and Public Works, President Carter stated that the “human suffering and financial costs associated with the Love Canal site are a national tragedy.” On December 11, 1980, when President Carter signed CERCLA into law, he stated that Love Canal was a “stark reminder of the neglect in our society to deal with [the] growing problem” of toxic wastes.⁶¹

CERCLA, commonly referred to as the “Superfund” law, creates incentives for preventing the release of hazardous substances and ensures that toxic and potentially dangerous sites are properly cleaned up.⁶²

⁵³ *Id.*

⁵⁴ Paul MacClennan, *The Environmental Legacy of Love Canal*, BUFF. NEWS, July 26, 1998, at 1H, available at <http://www.lexis.com>.

⁵⁵ S. Rep. No. 848, 96th Cong., 2d Sess., at 8 (1980) (quoting Michael H. Brown, *Love Canal, U.S.A.*, N.Y. TIMES MAG., Jan. 21, 1979, at 23).

⁵⁶ Love Canal Collection: Background on the Love Canal, Univ. Archives, Univ. Libraries, State Univ. of N.Y. at Buffalo, at http://www.ublib.buffalo.edu/libraries/projects/lovecanal/background_lovecanal.html (last modified Oct. 17, 2001).

⁵⁷ Paul MacClennan, *The Environmental Legacy of Love Canal*, BUFF. NEWS, July 26, 1998, at 1H, available at <http://www.lexis.com>.

⁵⁸ ROBERT V. PERCIVAL ET AL., ENVIRONMENTAL REGULATION: LAW, SCIENCE, AND POLICY 280 (2ND ED. 1996).

⁵⁹ S. REP. NO. 848, 96TH CONG., 2D SESS., at 7 (1980).

⁶⁰ See S. REP. NO. 848, 96TH CONG., 2D SESS., at 8-10 (1980); H.R. Rep. No. 1016, 96th Cong., 2d Sess., pt. 1, at 18-20 (1980).

⁶¹ REMARKS OF PRESIDENT CARTER ON SIGNING PUBLIC LAW 96-510, 16 WEEKLY COMP. PRES. DOC. 50 (Dec. 11, (1980)).

⁶² See eg. Michael P. Healy, *Direct Liability for Hazardous Substance Cleanups Under CERCLA: A Comprehensive Approach*, 42 CASE W. RES. L. REV. 65, 77 (1992).

On September 8, 1983, EPA classified Love Canal as one of the first sites on the Superfund list.⁶³ Today Superfund monies help finance the government's clean up of hazardous waste sites throughout the United States.⁶⁴ Love Canal and the media circus that followed served as catalysts for the regulation of hazardous waste dumping and cleanup.

The events surrounding Love Canal, like *Silent Spring*, had both a real-world impact and mass media appeal. The events of Love Canal had a real-world impact because people across the nation could relate to the residents of Love Canal. Therefore, the resulting toxic tragedy that ensued at Love Canal garnered mass media attention. This heightened media attention and resulting public concern helped shape toxics policy and directly led to the passage of CERCLA.

III. ERIN BROCKOVICH AND THE REGULATION OF CHROMIUM 6

There is a clear pattern in the impact of *Silent Spring* and Love Canal on toxics policy. First, both events gained widespread media attention as the stories surrounding them represented an environmental event that could not be ignored. Second, the publication of *Silent Spring* and the tragedy of Love Canal opened America's eyes to the hazards of chemicals in the environment. Third, policy makers were forced to take measures to alter then existing policies to respond to growing public concern. *Erin Brockovich* follows this same pattern.

A. The Story, the Movie, and the Outcry

1. The Story

As with *Silent Spring* and Love Canal the environmental phenomenon depicted in the movie *Erin Brockovich* has inspired fear and concern in the public psyche. The story begins in Hinkley, California, a town of roughly 3,500 residents, located 120 miles northeast of Los Angeles.⁶⁵ Hinkley is also home to a natural gas compressor station belonging to Pacific Gas & Electric Company (PG&E), a Californian utility that is an affiliate of one of the world's largest energy companies.⁶⁶ In the 1980's, residents of this small San Bernardino County town began complaining

⁶³ 48 Fed. Reg. 40658 (Sept. 8, 1983).

⁶⁴ Michael P. Healy, *Direct Liability for Hazardous Substance Cleanups Under CERCLA: A Comprehensive Approach*, 42 CASE W. RES. L. REV. 65, 73 (1992) ("CERCLA's paramount goal is to facilitate cleanup of hazardous substances through Superfund-financed and privately-financed response actions.").

⁶⁵ Kathleen Sharp, *Erin Brockovich: The Real Story*, SALON ARTS & ENT., at <http://www.salon.com/ent/feature/2000/04/14/sharp/index/html> (Apr. 14, 2000).

⁶⁶ Robert W. Welkos, *Digging For the Truth*, L.A. TIMES, Mar. 12, 2000, Calendar at 8, available at <http://www.lexis.com>.

that PG&E's compressor station had polluted their drinking water supply with chromium 6.⁶⁷

PG&E built the Hinkley compressor station in 1952 as part of a pipeline system that brings natural gas into PG&E's service territory.⁶⁸ The natural gas flows through a pipeline from the Texas Panhandle to California and then throughout much of the state, fueling heating systems and power plants.⁶⁹ As the natural gas moves through the pipeline friction causes the gas to lose pressure.⁷⁰ Compressor stations like the one in Hinkley force the gas back up to a higher pressure to facilitate transmission.⁷¹ During this process oil and water cool the gas compressor.⁷² To prevent rust from corroding the cooling PG&E uses a corrosion inhibitor.⁷³

Chromium 6 is one of the cheapest and most efficient commercially available corrosion inhibitors and was used by PG&E in their compressor stations.⁷⁴ Unfortunately, chromium 6 is also highly toxic suspected carcinogen.⁷⁵ PG&E used chromium 6 as its corrosion inhibitor.⁷⁶ Reminiscent of Hooker Chemical's activities at Love Canal, PG&E disposed huge amounts of chromium-tainted water into open, unlined ponds from 1952 to 1966.⁷⁷ During this period, PG&E workers allegedly discharged roughly 370 million gallons of chromium-tainted wastewater into spreading ponds around Hinkley.⁷⁸

In 1987, during an environmental assessment, PG&E discovered that the chromium had migrated into Hinkley's groundwater supply, contaminating ten private drinking wells with chromium 6 concentrations exceeding the state standard.⁷⁹ Some Hinkley residents claim that PG&E

⁶⁷ *Id.*

⁶⁸ Joe Koutsky, *Executive Officer's Report: PG&E Hinkley and the Film Erin Brockovich*, Lahontan Regional Water Quality Control Board, Mar. 2000, available at <http://www.swrcb.ca.gov/rwqcb6/eor/eor300.htm> (on file with author).

⁶⁹ Robert W. Welkos, *Digging For the Truth*, L.A. TIMES, Mar. 12, 2000, Calendar at 8, available at <http://www.lexis.com>.

⁷⁰ An Overview of a Natural Gas Compressor Station, BSI Group, at http://www.bsicos.com/global/Gas_Compression.htm (last modified 1998).

⁷¹ *Id.*

⁷² *Id.*

⁷³ Factsheet: Eliminating Hexavalent Chrome From Cooling Towers, L.A. Board of Public Works: Hazardous and Toxic Materials Office, available at <http://es.epa.gov/techinfo/facts/ca-htm/htmfact3.html> (last modified Nov. 13, 1995).

⁷⁴ *Id.*

⁷⁵ *Id.*

⁷⁶ Kathleen Sharp, *Erin Brockovich: The Real Story*, SALON ARTS & ENT., at <http://www.salon.com/ent/feature/2000/04/14/sharp/index/html> (Apr. 14, 2000).

⁷⁷ *California Utility Agrees to Settle Suit by Residents for \$50 Million to \$400 Million*, BNA TOXICS L. DAILY, May 11, 1995, available at, <http://www.lexis.com>.

⁷⁸ *Id.*

⁷⁹ Joe Koutsky, *Executive Officer's Report: Public Health Assessment for Pacific Gas and Electric site in Hinkley, San Bernardino County*, Lahontan Regional Water

knew of the chromium 6 contamination as early as 1965 but told no one.⁸⁰ On December 7, 1987, PG&E notified the Lahontan Regional Water Quality Board (LRWQB), which is responsible for Hinkley's water supply, and San Bernardino County about the contamination.⁸¹ On December 27, 1987, LRWQB issued Cleanup and Abatement Order 6-87-160, requiring PG&E to clean up the contaminated groundwater.⁸² PG&E then began cleaning up a 290-acre underground plume of toxic, chromium 6-laced material.⁸³ Throughout the early 1990's, PG&E spent \$12.5 million on this effort and approached the owners of three farms and ten houses in the area to inquire about buying their property.⁸⁴ When the company agreed to pay ten times the fair market value of one property, Hinkley townspeople became suspicious and took measures to file suit.⁸⁵

Hinkley residents, among other people, began to believe that PG&E's use of chromium 6 in its natural gas compressor stations was causing severe health problems in populations exposed to the chemical.⁸⁶ Many claimed that exposure to the contaminated water, soil, and dust particles were responsible for health problems including cancer, tumors, and birth defects.⁸⁷ In response, PG&E argued that the frequency of these types of health problems was not statistically significant in a population the size of Hinkley.⁸⁸ Yet, Hinkley's residents were exposed to the chromium everyday—drinking it in their water, and bathing in it and inhaling its vapors in the pool or showers.⁸⁹

Quality Control Board, Feb. 2001, available at <http://www.swrcb.ca.gov/rwqcb6/eor/eor201.htm> (last visited Apr. 27, 2002) (on file with author).

⁸⁰ Joseph Ascenzi, *Toxics suit cites PG&E in 4 deaths: Action by 56 plaintiffs says toxic water used to fill swimming pools*, BUS. PRESS/CAL., Aug. 14, 2000, available at, <http://www.lexis.com>.

⁸¹ Joe Koutsky, *Executive Officer's Report: PG&E Hinkley and the Film Erin Brockovich*, Lahontan Regional Water Quality Control Board, Mar. 2000, available at <http://www.swrcb.ca.gov/rwqcb6/eor/eor300.htm> (on file with author).

⁸² *Id.*

⁸³ *California Utility Agrees to Settle Suit by Residents for \$50 Million to \$400 Million*, BNA TOXICS L. DAILY, May 11, 1995, available at, <http://www.lexis.com>.

⁸⁴ Kathleen Sharp, *Erin Brockovich: The Real Story*, SALON ARTS & ENT., at <http://www.salon.com/ent/feature/2000/04/14/sharp/index/html> (Apr. 14, 2000).

⁸⁵ *Id.*

⁸⁶ *California Utility Agrees to Settle Suit by Residents for \$50 Million to \$400 Million*, BNA TOXICS L. DAILY, May 11, 1995, available at, <http://www.lexis.com>.

⁸⁷ See *California Utility Agrees to Settle Suit by Residents for \$50 Million to \$400 Million*, BNA TOXICS L. DAILY, May 11, 1995, available at, Lexis, News; Kathleen Sharp, *Erin Brockovich: The Real Story*, SALON ARTS & ENT., at <http://www.salon.com/ent/feature/2000/04/14/sharp/index/html> (Apr. 14, 2000).

⁸⁸ Robert W. Welkos, *Digging For the Truth*, L.A. TIMES, Mar. 12, 2000, Calendar at 8, available at <http://www.lexis.com>.

⁸⁹ *Id.*

Approximately 650 plaintiffs claimed that PG&E failed to warn them of the potential health risks associated with chromium 6.⁹⁰ Attorneys for the plaintiffs also alleged that two PG&E employees-turned whistleblowers were instructed by PG&E to dump all of the Hinkley compressor station records.⁹¹ We may never know the full story, because the subsequent lawsuit (*Anderson v. Pacific Gas & Electric Co.*, Superior Ct. for County of San Bernardino, Barstow Division, file BCV 00300), filed in 1993, was eventually settled for a \$333 million payment in an undisclosed arbitration agreement.⁹² At the time, this represented the largest settlement amount ever paid in a lawsuit in United States history.⁹³

Settlement offers cannot be used in court against a party as evidence of wrongdoing.⁹⁴ Because the arbitration was closed to the public, it is unclear exactly what scientific proof the plaintiffs presented or whether PG&E's actions actually harmed the health of Hinkley's residents.⁹⁵ In the realm of public opinion, however, a \$333 million settlement is as good as a conviction. PG&E's alleged cover-up of its activities and the enormity of the settlement sum dramatically increased the intrigue of the story and began to focus some attention on the potential dangers of chromium 6. Most people, however, may never have known about the residents of Hinkley or about chromium 6 if Hollywood had not taken an interest in telling the story.⁹⁶

2. The Movie

Erin Brockovich was an indisputable Hollywood success. Moviegoers and critics alike praised and embraced the story about a single working mother's fight against a company that contaminated a small town's water with chromium 6 and then tried to cover up the danger.⁹⁷

⁹⁰ *California Utility Agrees to Settle Suit by Residents for \$50 Million to \$400 Million*, BNA TOXICS L. DAILY, May 11, 1995, available at, <http://www.lexis.com>.

⁹¹ Robert W. Welkos, *Digging For the Truth*, L.A. TIMES, Mar. 12, 2000, Calendar at 8, available at <http://www.lexis.com>.

⁹² Federal News Service, *National Press Club Luncheon with Erin Brockovich, Activist*, Aug. 16, 2001, available at <http://www.lexis.com>.

⁹³ Martha Hamilton, *Big Business Plays the Heavy on Film; Companies Deal with Unwanted Fame*, WASH. POST, Apr. 7, 2000, Financial at E3, available at <http://www.lexis.com>.

⁹⁴ FED. R. EVID. 408.

⁹⁵ Kathleen Sharp, *Erin Brockovich: The Real Story*, SALON ARTS & ENT., at <http://www.salon.com/ent/feature/2000/04/14/sharp/index/html> (Apr. 14, 2000).

⁹⁶ See eg. Andrew Gumbel, *This Woman is at a Film Premiere, but She is Not a Film Star*, INDEP. (London), Apr. 1, 2000, Features at 1, available at, <http://www.lexis.com>.

⁹⁷ Kathleen Sharp, *Erin Brockovich: The Real Story*, SALON ARTS & ENT., at <http://www.salon.com/ent/feature/2000/04/14/sharp/index/html> (Apr. 14, 2000).

Ads for the movie proclaimed "[s]he brought a small town to its feet and a huge company to its knees."⁹⁸

The movie, directed by Steven Soderbergh and starring Julia Roberts, was an instant box office hit.⁹⁹ Released in March of 2000, in roughly two years *Erin Brockovich* grossed almost \$260 million dollars worldwide.¹⁰⁰ The movie received five Academy Award nominations and the film's heroine Julia Roberts won best actress for her portrayal of Ms. Brockovich.¹⁰¹ More than just box office success, *Erin Brockovich* "added new momentum to the real-life story."¹⁰² *Erin Brockovich* was the initial media mechanism to garner public awareness and concern about chromium 6.

Hollywood's influence, on the public perception of environmental issues does not come by accident.¹⁰³ Groups such as the Environmental Media Association (EMA), established in 1989, strive "to mobilize the entertainment community in a global effort to educate people about environmental problems and inspire them to act on those problems now."¹⁰⁴ EMA believes "in the power of the media [to influence public perception] and . . . [uses] that power to the environments' advantage."¹⁰⁵ Everything from what props are used on set, to television and movie storylines have been touched by an environmentally motivated Hollywood.¹⁰⁶ Although not involved with the production of *Erin Brockovich*,¹⁰⁷ on December 6, 2000, EMA presented *Erin Brockovich* with an

⁹⁸ *Erin Brockovich* Promotion, Universal Studios, available at <http://www.erinbrockovich.com/home.html> (last modified 2000).

⁹⁹ *Id.*

¹⁰⁰ The Numbers: Box Office Date, Movie Stars, Idle Speculation: Erin Brockovich, at <http://www.the-numbers.com/movies/2000/ERINB.html> (last modified Mar. 15, 2002).

¹⁰¹ Oscars 2001 Scorecard, E-Online, at <http://www.eonline.com/Features/Awards/Oscars2001/Scorecard/> (last visited Apr. 27, 2002).

¹⁰² Andrew Gumbel, *This Woman is at a Film Premiere, but She is Not a Film Star*, INDEP. (London), Apr. 1, 2000, Features at 1, available at, <http://www.lexis.com>.

¹⁰³ See eg. Gary Polakovic, *Seeing a Greener Big Screen; 'Erin Brockovich' has Plenty of Company as Films Increasingly Cast Polluters as the Villain*, L.A. TIMES, Mar. 27, 2001, at A1, available at <http://www.lexis.com>; Gretel Shueller, *Can Hollywood Save the World? Environmental Issues in the Movies*, SIERRA MAG., July 1, 2001, at Vol. 86, p.68, available at <http://www.lexis.com>.

¹⁰⁴ Environmental Media Association, at <http://www.ema-online.org/mission.htm> (last visited May 5, 2002).

¹⁰⁵ Environment Media Association, *About EMA*, at http://www.ema-online.org/what_we_do_about.htm (last visited Mar. 10, 2003).

¹⁰⁶ Gretel Shueller, *Can Hollywood Save the World? Environmental Issues in the Movies*, SIERRA MAG., July 1, 2001, at Vol. 86, p.68, available at <http://www.lexis.com>.

¹⁰⁷ Telephone Interview with Environmental Media Association Representative, (Mar. 10, 2003).

award to “recognize the meaningful use of an environmental theme” in a feature film.¹⁰⁸

Some suggest, however, that Hollywood should not be used as a means to influence toxics policy.¹⁰⁹ Primarily industry advocates argue that Hollywood misrepresents industry’s actions toward the environment and does not depict the steps industry takes to help protect our natural resources.¹¹⁰ Also, given the unending complexity of environmental issues, movies cannot fully capture every side of an environmental issue.¹¹¹ *Erin Brockovich*, for instance, did not delve into all of the scientific uncertainty surrounding the toxicity of chromium 6 when ingested.¹¹² As one commentator contended the “current hysteria surrounding chromium is not based upon reliable science, but is a product of newspaper blitz,” . . .and the media has “scared the consumers of water without a reasonable scientific basis.”¹¹³

Nonetheless, *Erin Brockovich* served the important function of bringing awareness to the subject of our water quality. At the same time, the movie opened up channels of discussion for opponents of more stringent water regulation by creating a media forum to discuss water quality issues in general. In this respect, *Erin Brockovich* represents another source of information in a world where information can be accessed through books, the media, or even the touch of a keyboard. As with any source of information, the public has the ability to question its validity.

3. The Outcry

What press coverage chromium 6 and the Hinkley story first received paled in comparison to the media frenzy after the release of *Erin Brockovich*.¹¹⁴ With the release of *Erin Brockovich* “all of a sudden, a

¹⁰⁸ Environmental Media Association, *10th Annual EMA Awards, Dec. 6, 2000*, at http://www.ema-online.org/awards_10th_annual.htm (last visited Mar. 10, 2003).

¹⁰⁹ Gary Polakovic, *Seeing a Greener Big Screen: ‘Erin Brockovich’ has Plenty of Company as Films Increasingly Cast Polluters as the Villain*, L.A. TIMES, Mar. 27, 2001, at A1, available at <http://www.lexis.com>.

¹¹⁰ *Id.*

¹¹¹ *Id.*

¹¹² *Id.*

¹¹³ Thomas L. Van Wyngarden and Nana Nakano, *Chromium 6: Public Perception Versus Public Health*, TOXIC CHEMICALS LITIG. REP., May 4, 2001, at Vol. 19, 1, available at <http://www.lexis.com>.

¹¹⁴ Andrew Gumbel, *This Woman is at a Film Premiere, but She is Not a Film Star*, INDEP. (London), Apr. 1, 2000, Features at 1, available at <http://www.lexis.com> (“Ms. Brockovich’s story . . .never received much attention in the news at the time,” but now “the newspapers and television stations” . . .are “falling over themselves to cover the movie, and the scandal, in painstaking detail.”); David Lazarus, *PG&E Cast as Villain in New True-Story Movie*, S. F. CHRON., Mar. 16, 2000, News at A1, available at <http://www.lexis.com> (Before the *Erin Brockovich*’s release PG&E “was pleasantly surprised to find the matter all but ignored by the media.”).

well-kept dirty secret [had] become widespread public knowledge."¹¹⁵ As a result of the nation-wide release of *Erin Brockovich*, print media and television shows spotlighted the potential health risks of chromium 6.

Major newspapers across the nation covered the movie and its message, including: Los Angeles Times, Chicago Tribune, San Francisco Chronicle, Houston Chronicle, Washington Post, and New York Times. Concurrently, multiple national television shows ranging from NBC's Dateline to the syndicated Oprah Winfrey show covered *Erin Brockovich* and the events in Hinkley, California. The Oscar buzz surrounding the movie further focused media attention on chromium 6.

In addition to informing the general public about chromium 6, *Erin Brockovich* informed Hinkley residents about the potential contamination in their water. Following the movie's release, additional plaintiffs brought claims against PG&E for ground water contamination.¹¹⁶ These plaintiffs claimed they "learned of PG&E's alleged chromium contamination of ground water around Hinkley when the movie was released."¹¹⁷

However, *Erin Brockovich's* message did not escape criticism. A spokesman for PG&E tried to downplay the movie's implications stating, "our general response with respect to the movie is just that we recognize it's a dramatization. It's an entertainment vehicle."¹¹⁸ Unfortunately for PG&E the film depicts the company as "the epitome of corporate evil" with its attempt to deceive Hinkley residents.¹¹⁹ In response to the potential PR nightmare, PG&E sent out an internal memo to its employees noting, "'based on a true story' doesn't mean that everything in the story is true."¹²⁰

Some in the media take PG&E's point of view.¹²¹ One commentator argued that PG&E's \$333 million settlement merely reflected PG&E's

¹¹⁵ Andrew Gumbel, *This Woman is at a Film Premiere, but She is Not a Film Star*, INDEP. (London), Apr. 1, 2000, Features at 1, available at, <http://www.lexis.com>.

¹¹⁶ Bloomberg News, *California; 'Brockovich' Film Prompts More Residents to Sue PG&E*, L.A. TIMES, Oct. 27, 2000, Business at C2, available at, <http://www.lexis.com>.

¹¹⁷ *Id.*

¹¹⁸ Christine Hanley, *Hit Movie Puts Spotlight on Utility Company*, DEN. ROCKY MOUNTAIN NEWS, Mar. 28, 2000, Business at 11b, available at, <http://www.lexis.com>, quoting Greg Pruett, spokesman at the time for Pacific Gas & Electric.

¹¹⁹ See eg. David Lazarus, *PG&E Cast as Villain in New True-Story' Movie*, S. F. CHRON. Chronicle, Mar. 16, 2000, News at A1, available at <http://www.lexis.com>; Martha Hamilton, *Big Business Plays the Heavy on Film; Companies Deal with Unwanted Fame*, WASH. POST, Apr. 7, 2000, Financial at E3, available at <http://www.lexis.com>.

¹²⁰ Martha Hamilton, *Big Business Plays the Heavy on Film; Companies Deal with Unwanted Fame*, WASH. POST, Apr. 7, 2000, Financial at E3, available at <http://www.lexis.com>. quoting March 10 PG&E internal memo authored by then PG&E Chairman Bob Glynn Jr.

¹²¹ See eg. Michael Fumento, *The Dark Side of Erin Brockovich*, WASH. TIMES, Apr. 04, 2000, Commentary at A17, available at <http://www.lexis.com>.

apprehension about going against one of the “most successful trial attorneys” and a jury likely to be biased.¹²² Furthermore, he argued “no one agent could possibly have caused more than a handful of the symptoms described and chromium 6 in the water almost certainly couldn’t have caused any of them.”¹²³ Even the ABC news show “20/20” questioned the truthfulness of *Erin Brockovich*.¹²⁴

In 20/20’s segment “Give Me a Break,” anchor John Stossel questioned the movie’s claim that chromium 6 caused a multitude of diseases including “cancer, Hodgkin’s disease, and spinal deterioration.”¹²⁵ Stossel pointed to the “murky” science on the issue and how “it’s natural when people are sick and industry’s been caught polluting and covering up to assume the big bad company made people sick, but that doesn’t mean it’s true.”¹²⁶ Nevertheless, for all of Mr. Stossel’s protestations against the movie’s truthfulness, when asked he admitted that he would not let his family drink the water in Hinkley.¹²⁷

Mr. Stossel’s reaction exemplifies *Erin Brockovich*’s impact on the public’s perception of chromium 6, even among the movie’s skeptics. *Erin Brockovich* has been heralded as focusing attention on the harm water contamination can cause to drinking water quality and public health.¹²⁸ More specifically, as the California Senate Committee on Health and Human Services noted “the release of the film *Erin Brockovich* . . . made chromium a common household word . . . [and] has vastly increased public awareness about chromium and its health effects.”¹²⁹

The outcry following *Erin Brockovich* mimics that of *Silent Spring* and Love Canal. Any skepticism regarding the toxicity of chromium 6 mirrors the skepticism regarding the toxicity of DDT following the publication of *Silent Spring*. *Erin Brockovich*, like *Silent Spring* and Love Ca-

¹²² Michael Fumento, *Erin Brockovich*, American Outlook, Hudson Institute, Summer 2000 available at <http://www.fumento.com/hudsonbrock.html> (last visited Apr. 27, 2002) (on file with author).

¹²³ See eg. Michael Fumento, *The Dark Side of Erin Brockovich*, WASH. TIMES, Apr. 04, 2000, Commentary at A17, available at <http://www.lexis.com>.

¹²⁴ See *20/20: Give Me a Break; Realities behind Erin Brockovich* (ABC television broadcast, July 14, 2000), available at <http://www.lexis.com>.

¹²⁵ *Id.*

¹²⁶ *Id.*

¹²⁷ *Id.*

¹²⁸ “*Erin Brockovich*” Earns Rave Review From Water Industry, ENVTL. NEWS SERV., Mar. 20, 2000, available at <http://www.lexis.com> (“American Water Works Association (AWWA) applauds . . . ‘Erin Brockovich’ for bringing much needed attention to the damage water polluters do to drinking water quality and public health . . . AWWA is the largest organization of water supply professionals in the world”).

¹²⁹ *Health Effects of Chromium IV contamination of Drinking Water, Before the CA Leg. J. Informational Hearing of the S. Comm. on Health and Human Services and S. Comm. on Natural Resources and Wildlife and Assemb. Comm. on Environmental Safety and Toxic Materials*, at 7 (Oct. 24, 2000).

nal, increased the public's awareness and concern about a toxics issue. The direct effect of this increased public awareness and concern regarding the potential health risks of chromium 6 is unfolding in Glendale, California. A debate continues regarding whether Glendale's water supply may pose a health risk from chromium 6 contamination. However, before examining Glendale, it is important to understand the science of chromium 6 and the uncertainty regarding its toxicity.

B. The Science of Chromium 6

1. Scientific Uncertainty in the Regulatory Process

Scientific uncertainty is perhaps the foremost problem with toxics policy decisions.¹³⁰ Uncertainty plagues toxics policy decisions from the initial stages of risk assessment to the final codification of regulations.¹³¹ Most of this uncertainty stems from the infinite number of variables that regulators confront during the decision making process.¹³² Unfortunately science cannot determine the exact level at which a chemical becomes a real risk to humans.¹³³ Therefore, regulators must develop quantitative health standards for toxins based on risk assessments.¹³⁴

Risk assessments consist of four main components: (1) hazard identification; (2) dose-response assessment; (3) exposure assessment; and (4) risk characterization.¹³⁵ This risk assessment process often yields only a general sense of the toxicity of a substance.¹³⁶ For instance, estimates for cancer risk assessment models can vary over ten orders of magnitude.¹³⁷ The disparity between some low and high estimates of cancer risks has

¹³⁰ For a discussion of uncertainty in the toxic regulatory process see eg. Wendy E. Wagner, *The Science Charade in Toxic Risk Regulation*, 95 COLUM. L. REV. 1613 (1995); Alyson C. Flournoy, *Legislating Inaction: Asking the Wrong Question in Protective Environmental Decisionmaking*, 15 HARV. ENVTL. L. REV. 327 (1991).

¹³¹ See eg. Alyson C. Flournoy, *Legislating Inaction: Asking the Wrong Questions in Protective Environmental Decisionmaking*, 15 HARV. L. ENVTL. REV. 327 (1991).

¹³² See generally Wendy E. Wagner, *Science Charade in Toxic Risk Regulation*, 95 COLUM. L. REV. 1613 (1995).

¹³³ *Id.* at 1619 (1995).

¹³⁴ See eg. Mark E. Shere, *The Myth of Meaningful Environmental Risk Assessment*, 19 HARV. ENVTL. L. REV. 409, 412 (1995) ("Risk assessment is a quantitative estimate of the chance that a person will be stricken with cancer or other serious illness over the course of that person's lifetime due to exposure to a chemical substance.").

¹³⁵ For a detailed discussion on the four stages of risk assessment see Mark E. Shere, *The Myth of Meaningful Environmental Risk Assessment*, 19 HARV. ENVTL. L. REV. 409, 430 (1995).

¹³⁶ *Id.* at 412.

¹³⁷ Sidney A. Shapiro & Thomas O. McGarity, *Not So Paradoxical: the Rationale for Technology-Based Regulation*, 1991 DUKE L.J. 729, 732 (1991).

been compared to having “no idea if you had enough money to pay for a cup of coffee or the national debt, and no way of finding out.”¹³⁸

This uncertainty or gaps in knowledge are known as “trans-science” and raise “questions which can be asked of science and yet cannot be answered by science.”¹³⁹ In part these trans-science problems stem from a lack of complete experimentation.¹⁴⁰ For instance, scientists are forced to extrapolate chemical toxicity levels for humans from animal studies.¹⁴¹ This is problematic because the studies use much higher doses than expected human exposure.¹⁴² Scientists must then construct a “dose-response curve” to extrapolate the human response at lower levels of exposure.¹⁴³ Therefore, animal studies give a limited indication of possible human health effects from exposure to a specific substance.¹⁴⁴

Scientists also confront informational and ethical problems with epidemiological studies (studies conducted on humans).¹⁴⁵ First, epidemiological studies are not “true experiments,” because researchers cannot control the variables that affect the data.¹⁴⁶ Second, scientists do not generally test suspect chemicals on humans because of ethical considera-

¹³⁸ Mark E. Shere, *The Myth of Meaningful Environmental Risk Assessment*, 19 HARV. ENVTL. L. REV. 409, 414 (1995) (Citing Sidney A. Shapiro & Thomas O. McGarity, *Not So Paradoxical: the Rationale for Technology-Based Regulation*, 1991 DUKE L.J. 729, 732 (1991)).

¹³⁹ Wendy E. Wagner, *The Science Charade in Toxic Risk Regulation*, 95 COLUM. L. REV. 1613, 1619 (1995) quoting Alvin M. Weinberg, *Science and Trans-Science*, 10 MINERVA 209, 209 (1972).

¹⁴⁰ Wendy E. Wagner, *The Science Charade in Toxic Risk Regulation*, 95 COLUM. L. REV. 1613, 1620 (1995).

¹⁴¹ Troyen A. Brennan, *Causal Chains and Statistical Links: The Role of Scientific Uncertainty in Hazardous-Substance Litigation*, 73 CORNELL L. REV. 469, 509 (1988) (“Scientists assume that animal models of carcinogenesis always apply to humans, but limited resources preclude undertaking a set of low-level-exposure animal studies on all suspected carcinogens.”).

¹⁴² Alyson C. Flournoy, *Legislating Inaction: Asking the Wrong Questions in Protective Environmental Decisionmaking*, 15 HARV. ENVTL. L. REV. 327, 334 (1991) (High doses must be administered to animals because “enormous costs and practical difficulties are associated with a test that attempts to detect harmful effects that may occur in one out of a hundred (or a million) people as a result of low-level exposure.”).

¹⁴³ *Id.* at 334.

¹⁴⁴ Troyen A. Brennan, *Causal Chains and Statistical Links: The Role of Scientific Uncertainty in Hazardous-Substance Litigation*, 73 CORNELL L. REV. 469, 509 (1988).

¹⁴⁵ Wendy E. Wagner, *The Science Charade in Toxic Risk Regulation*, 95 COLUM. L. REV. 1613, 1621 (1995); Troyen A. Brennan, *Causal Chains and Statistical Links: The Role of Scientific Uncertainty in Hazardous-Substance Litigation*, 73 CORNELL L. REV. 469, 507 (1988) (“Epidemiology applies statistical techniques and probabilistic reasoning to disease incidence”).

¹⁴⁶ Troyen A. Brennan, *Causal Chains and Statistical Links: The Role of Scientific Uncertainty in Hazardous-Substance Litigation*, 73 CORNELL L. REV. 469, 507 (1988).

tions.¹⁴⁷ Oftentimes regulators utilize policy considerations to fill in these trans-scientific gaps in knowledge.¹⁴⁸ The result is that the "outstanding characteristic" of regulating toxic substances is "chronic and pervasive uncertainty."¹⁴⁹

2. Uncertainty Regarding the Health Effects of Chromium 6

As with other toxic substances, there exists a lot of scientific uncertainty regarding the specific health effects of chromium 6. Chromium is a naturally occurring element found in rocks, animals, plants, soil, and in volcanic gases.¹⁵⁰ The most common chromium forms are, chromium (0), chromium 3, and chromium 6.¹⁵¹ These different forms of chromium have varying attributes. Chromium 3 occurs naturally in the environment and is an essential nutrient for humans with a recommended dosage of 50 to 200 µg per day for adults.¹⁵² It promotes the action of insulin in body tissues so the body can use sugar, protein, and fat.¹⁵³ This naturally occurring chromium 3 is also used as brick lining for high-temperature industrial furnaces that are used to make metals, alloys, and chemical compounds.¹⁵⁴

On the other hand, chromium 6 and chromium (0) are generally produced by and used in industrial processes.¹⁵⁵ U.S. industry has used chromium commercially for over 100 years.¹⁵⁶ The chemical industry

¹⁴⁷ Alyson C. Flournoy, *Legislating Inaction: Asking the Wrong Questions in Protective Environmental Decisionmaking*, 15 HARV. ENVTL. L. REV. 327, 333 (1991).

¹⁴⁸ Wendy E. Wagner, *The Science Charade in Toxic Risk Regulation*, 95 COLUM. L. REV. 1613, 1622 (1995).

¹⁴⁹ John S. Applegate, *Worst Things First: Risk, Information, and Regulatory Structure in Toxic Substances Control*, 9 YALE J. ON REG. 277, 280 (1992).

¹⁵⁰ For a detailed discussion of chromium 6 see Agency for Toxic Substances and Disease Registry (ATSDR) 2000. Public Health Statement for chromium (Update). Atlanta, GA: U.S. Dept of Health and Human Services, Public Health Service available at <http://www.atsdr.cdc.gov/ToxProfiles/phs8810.html> (last visited Apr. 27, 2002); U.S. Environmental Protection Agency, *Toxicological Review of Hexavalent Chromium* CAS No. 18540-29-9, U.S. Environmental Protection Agency, DC: August 1998, available at <http://www.epa.gov/IRIS/toxreviews/0144-tr.pdf> (last visited Apr. 27, 2002).

¹⁵¹ Chromium and Compounds: Hazard Summary, at <http://www.epa.gov/ttn/atw/hlthef/chromium.html> (last visited Apr. 28, 2002).

¹⁵² CA Dept. of Health Services, Chromium -6 in Drinking Water: Background Information, at <http://www.dhs.ca.gov/ps/ddwem/chemicals/Chromium6/Cr+6backgroundinfo.htm> (last modified Apr. 05, 2002).

¹⁵³ Agency for Toxic Substances and Disease Registry (ATSDR) 2000. Toxicological profile for chromium (Update). Atlanta, GA: U.S. Dept of Health and Human Services, Public Health Service available at <http://www.atsdr.cdc.gov/ToxProfiles/phs8810.html>.

¹⁵⁴ *Id.*

¹⁵⁵ *Id.*

¹⁵⁶ *Reflections on Hexavalent Chromium: Health Hazards of an Industrial Heavyweight*, Environmental Health Perspectives V.108, N.9, Sept. 2000, available at <http://>

produces chromium compounds (mostly chromium 3 and chromium 6) for chrome plating, the manufacture of dyes and pigments, leather tanning, and wood preserving.¹⁵⁷ Chromium (0) makes up the metal chromium, which is a steel-gray solid with a high melting point used primarily for making steel and other alloys.¹⁵⁸ Smaller amounts of chromium 6 are used as rust and corrosion inhibitors, as in PG&E's Hinkley gas compressor station.¹⁵⁹

The general population is exposed to some form of chromium by eating food, drinking water, and inhaling air that contains the chemical.¹⁶⁰ Many factors determine whether a person will be harmed by exposure to chromium 6, including the duration of exposure, the dose, and the route of exposure.¹⁶¹ For instance, people living in close proximity to chromium waste disposal sites or chromium manufacturing and processing plants have a greater probability of higher exposure rates through the air and water than the general population.¹⁶²

There are a few notable differences between chromium 6 and chromium 3. Experts consider chromium 6 to be more toxic than chromium 3.¹⁶³ Of the two, researchers have classified only chromium 6 as a human carcinogen because only chromium 6 has been found to be carcinogenic in animal studies.¹⁶⁴ Also, human beings absorb chromium 6 more easily than chromium 3. The body, however, may convert some amount of chromium 6 to chromium 3.¹⁶⁵ Researchers believe that ingested chro-

www.mindfully.org/Pesticide/Hexavalent-Chromium-Health-Hazards.htm (last visited Apr. 27, 2002) (on file with author).

¹⁵⁷ Agency for Toxic Substances and Disease Registry (ATSDR) 2000. Toxicological profile for chromium (Update). Atlanta, GA: U.S. Dept of Health and Human Services, Public Health Service available at <http://www.atsdr.cdc.gov/ToxProfiles/phs8810.html>.

¹⁵⁸ *Id.*

¹⁵⁹ National Primary Drinking Water Regulations: Consumer Factsheet on Chromium, at <http://www.epa.gov/safewater/dwh/c-ioc/chromium.html> (last modified Mar. 09, 2001).

¹⁶⁰ Chromium and Compounds: Hazard Summary, at <http://www.epa.gov/ttn/atw/hlthef/chromium.html> (last visited Apr. 28, 2002).

¹⁶¹ Agency for Toxic Substances and Disease Registry (ATSDR) 2000. Toxicological profile for chromium (Update). Atlanta, GA: U.S. Dept of Health and Human Services, Public Health Service available at <http://www.atsdr.cdc.gov/ToxProfiles/phs8810.html>.

¹⁶² *Id.* ("An estimated 305,500 workers in the United States are potentially exposed to chromium and chromium-containing compounds in the workplace.")

¹⁶³ Chromium and Compounds: Hazard Summary, at <http://www.epa.gov/ttn/atw/hlthef/chromium.html> (last visited Apr. 28, 2002).

¹⁶⁴ *Id.*

¹⁶⁵ Agency for Toxic Substances and Disease Registry (ATSDR) 2000. Toxicological profile for chromium (Update). Atlanta, GA: U.S. Dept of Health and Human Services, Public Health Service available at <http://www.atsdr.cdc.gov/ToxProfiles/phs8810.html> but see *Reflections on Hexavalent Chromium: Health Hazards of an Industrial Heavyweight*, ENVTL. HEALTH PERSP. V.108, N.9, Sept. 2000, (citing that

mium 6 is reduced to the chromium 3 form in the gastrointestinal tract,¹⁶⁶ when it comes into contact with the body's gastric acids and other organic reducing agents.¹⁶⁷

Few studies, however, have been done on the health effects of ingested chromium 6.¹⁶⁸ The bulk of the information regarding the toxicity of chromium 6 comes from studies of the carcinogenic effects of chromium 6 when inhaled.¹⁶⁹ EPA identifies the respiratory tract as the major target organ for chromium 6 toxicity from acute and chronic inhalation exposures.¹⁷⁰ Cases of inhalation exposure show that gastrointestinal and neurological effects are associated with acute inhalation to chromium 6.¹⁷¹ Specifically, inhalation exposure to chromium 6 above the national standard can cause irritation to the nose, such as runny nose, sneezing, itching, nosebleeds, ulcers, and holes in the nasal septum,¹⁷² perforations and ulcerations of the septum, bronchitis, decreased pulmonary function, pneumonia, and other respiratory effects.¹⁷³

Epidemiological studies from the workplace show a higher occurrence of cancer among workers exposed to certain airborne chromium 6 compounds in occupations such as chromate production, chromate pigment production and chromium plating industries.¹⁷⁴ Also, acute dermal exposure to chromium 6 has been shown to cause skin burns.¹⁷⁵ Finally, animal studies have shown that certain chemical forms of chromium 6 cause cancer in laboratory animals when the animals are injected with

some experts believe as much as 10% of the chromium 6 may be absorbed into the human body and not converted into chromium 3.) *available at* <http://www.mindfully.org/Pesticide/Hexavalent-Chromium-Health-Hazards.htm> (last visited Apr. 27, 2002) (on file with author).

¹⁶⁶ *Id.*

¹⁶⁷ U.S. Environmental Protection Agency, *Toxicological Review of Hexavalent Chromium* CAS No. 18540-29-9, 48, U.S. Environmental Protection Agency, DC: August 1998, *available at* <http://www.epa.gov/IRIS/toxreviews/0144-tr.pdf> (last visited Apr. 27, 2002).

¹⁶⁸ *Id.*

¹⁶⁹ *Id.*

¹⁷⁰ Chromium and Compounds: Hazard Summary, *at* <http://www.epa.gov/ttn/atw/hlthef/chromium.html> (last visited Apr. 28, 2002).

¹⁷¹ *Id.*

¹⁷² Agency for Toxic Substances and Disease Registry (ATSDR) 2000. Toxicological profile for chromium (Update). Atlanta, GA: U.S. Dept of Health and Human Services, Public Health Service *available at* <http://www.atsdr.cdc.gov/ToxProfiles/phs8810.html>.

¹⁷³ Chromium and Compounds: Hazard Summary, *at* <http://www.epa.gov/ttn/atw/hlthef/chromium.html> (last visited Apr. 28, 2002).

¹⁷⁴ Agency for Toxic Substances and Disease Registry (ATSDR) 2000. Toxicological profile for chromium (Update). Atlanta, GA: U.S. Dept of Health and Human Services, Public Health Service *available at* <http://www.atsdr.cdc.gov/ToxProfiles/phs8810.html> (last visited Apr. 27, 2002).

¹⁷⁵ Chromium and Compounds: Hazard Summary, *at* <http://www.epa.gov/ttn/atw/hlthef/chromium.html> (last visited Apr. 28, 2002).

chromium 6 or made to inhale the chemical.¹⁷⁶ Based on these studies both the U.S. Department of Health and Human Services and the International Agency for Research on Cancer have determined that certain chromium 6 compounds are human carcinogens.¹⁷⁷ EPA has also determined that inhaled chromium 6 is carcinogenic to humans.¹⁷⁸

However, researchers do not know everything about the health effects of chromium. For instance, “very few studies have looked at how chromium can affect the health of children.”¹⁷⁹ Also, researchers do not know if exposure to chromium will result in birth defects or other developmental effects in people.¹⁸⁰ EPA asserts there is insufficient information to determine whether chromium 6 ingested through water or food is a human carcinogen,¹⁸¹ although ingestion of very high doses of chromium 6 has been documented to cause “stomach upsets and ulcers, convulsions, kidney and liver damage, and even death.”¹⁸² In its chromium 6 regulations, the California Department of Health Services (CDHS) asserts, “despite the carcinogenicity of chromium 6 in occupational settings and in laboratory animals and concerns about inhalation exposures, the evidence for its carcinogenicity when ingested is not compelling.”¹⁸³

¹⁷⁶ Agency for Toxic Substances and Disease Registry (ATSDR) 2000. Toxicological profile for chromium (Update). Atlanta, GA: U.S. Dept of Health and Human Services, Public Health Service available at <http://www.atsdr.cdc.gov/ToxProfiles/phs8810.html>.

¹⁷⁷ *Id.*

¹⁷⁸ U.S. Environmental Protection Agency, *Toxicological Review of Hexavalent Chromium* CAS No. 18540-29-9, 48, U.S. Environmental Protection Agency, D.C.: August 1998, available at <http://www.epa.gov/IRIS/toxreviews/0144-tr.pdf> (last visited Apr. 27, 2002).

¹⁷⁹ Agency for Toxic Substances and Disease Registry (ATSDR) 2000. Toxicological profile for chromium (Update). Atlanta, GA: U.S. Dept of Health and Human Services, Public Health Service available at <http://www.atsdr.cdc.gov/ToxProfiles/phs8810.html>.

¹⁸⁰ *Id.* (“Birth defects have been observed in animals exposed to chromium(IV).”).

¹⁸¹ U.S. Environmental Protection Agency, *Toxicological Review of Hexavalent Chromium* CAS No. 18540-29-9, 48, U.S. Environmental Protection Agency, D.C.: August 1998, available at <http://www.epa.gov/IRIS/toxreviews/0144-tr.pdf> (last visited Apr. 27, 2002).

¹⁸² Agency for Toxic Substances and Disease Registry (ATSDR) 2000. Toxicological profile for chromium (Update). Atlanta, GA: U.S. Dept of Health and Human Services, Public Health Service available at <http://www.atsdr.cdc.gov/ToxProfiles/phs8810.html>; see *Reflections on Hexavalent Chromium: Health Hazards of an Industrial Heavyweight*, ENVTL HEALTH PERSP. V.108, N.9, Sept. 2000, available at <http://www.mindfully.org/Pesticide/Hexavalent-Chromium-Health-Hazards.htm> (on file with author).

¹⁸³ CA Dept. of Health Services, Chromium -6 in Drinking Water: Background Information, at <http://www.dhs.ca.gov/ps/ddwem/chemicals/Chromium6/Cr+6backgroundinfo.htm> (last modified Apr. 05, 2002).

However, researchers know little about all of the health consequences from the long-term ingestion of water contaminated with chromium 6.¹⁸⁴

C. Current Regulation of Chromium 6

Both state and federal agencies regulate chromium levels in drinking water. CDHS, the agency responsible for setting California's primary drinking water standards, currently regulates chromium in drinking water as total chromium present in the water supply.¹⁸⁵ However, due to recent changes in California state law chromium 6 will be regulated separately in the future.¹⁸⁶

In 1977, CDHS established a 50 parts per billion (50 parts total chromium per billion parts of drinking water—ppb) maximum contaminant level (MCL) standard for total chromium present in drinking water.¹⁸⁷ MCLs consider both public health goals and the economic and technical feasibility of achieving these goals.¹⁸⁸ CDHS claims that it based its total chromium standard on what it considered to be "protective of the public health for chromium 6."¹⁸⁹ The California standard is twice as stringent as the national standard of 100 ppb set by EPA in 1991.¹⁹⁰

In 1999, the Office of Environmental Health Hazard Assessment (OEHHA), the agency that establishes public health goals in California, suggested a public health goal (PHG) for total chromium in California's drinking water of 2.5 parts per billion.¹⁹¹ In setting the PHG for chromium, OEHHA assumed that chromium 6 was a carcinogen when ingested.¹⁹² Unlike the process for determining the MCL for chromium, the California Safe Drinking Water Act of 1996 requires OEHHA to base its public health goals exclusively on scientific and public health considerations.¹⁹³ CDHS then uses the PHG to establish its primary drinking water

¹⁸⁴ U.S. Environmental Protection Agency, *Toxicological Review of Hexavalent Chromium* CAS No. 18540-29-9, 49, U.S. Environmental Protection Agency, DC: August 1998, available at <http://www.epa.gov/IRIS/toxreviews/0144-tr.pdf> (last visited Apr. 27, 2002) ("Relatively few studies in the literature address the oral toxicity of Cr(VI).").

¹⁸⁵ CAL. CODE REGS. tit. 22, § 64431 (2003).

¹⁸⁶ See S.B. 351, 2001 Leg., Reg. Sess. (Ca. 2001)(requiring CDHS to adopt a chromium-6 MCL by January 1, 2004).

¹⁸⁷ CAL. CODE REGS. tit. 22, § 64431 (2003).

¹⁸⁸ CAL. HEALTH & SAFETY CODE §116365 (West 2003).

¹⁸⁹ CA Dept. of Health Services, Chromium -6 in Drinking Water: Background Information, at <http://www.ca.gov/ps/ddwem/chemicals/Chromium6/Cr+6backgroundinfo.htm> (last modified Apr. 05, 2002).

¹⁹⁰ 40 C.F.R. § 141.51 (2003).

¹⁹¹ OEHHA, 1999, *Public Health Goal for Chromium in Drinking Water*, Office of Environmental Health Hazard Assessment, Feb. 1999.

¹⁹² *Id.*

¹⁹³ CAL. HEALTH & SAFETY CODE §116365 (West 2003).

standards.¹⁹⁴ Sometimes the PHG and MCL differ because CDHS “acknowledges that in setting a drinking water standard there is a balance that must be reached between the cost to the public and the benefit the public receives in risk reduction.”¹⁹⁵

In August 1999, responding to OEHHA’s 2.5 ppb chromium PHG, CDHS began conducting tests on a small number of water systems throughout California to determine the water’s chromium 6 levels.¹⁹⁶ Prior to these tests, agencies knew little about the levels of chromium 6 in California’s water systems.¹⁹⁷ In fact, California only required water agencies to test for total chromium present in drinking water and not chromium 6 separately.¹⁹⁸ Both CDHS and OEHHA had determined their chromium standards based on an assumption about the amount of chromium 6 present in total chromium.¹⁹⁹ The agencies had assumed that chromium 6 makes up only 7.2% of any chromium sample. Yet many experts felt that this percentage was far too low.²⁰⁰

The 7.2% figure comes from a study of two lakes in North Carolina.²⁰¹ At the time CDHS established the MCL for chromium there was very little data regarding the actual percentage of chromium 6 in total chromium in drinking water—in fact only the one study had been conducted.²⁰² No data existed regarding the percentage of chromium 6 found in total chromium in water systems in California.²⁰³

CDHS’s 1999 study of California’s drinking water demonstrated that, on average, chromium 6 makes up more than 50% of total chromium in California’s drinking water—almost seven times more than the

¹⁹⁴ *Id.* See OEHHA, 1999, *Public Health Goal for Chromium in Drinking Water*, Office of Environmental Health Hazard Assessment, Feb. 1999.

¹⁹⁵ *Health Effects of Chromium IV Contamination of Drinking Water*, Joint Informational Hearing, (Oct. 24, 2000)(statement of David P. Spath, California Dept. of Health Services).

¹⁹⁶ *Id.*

¹⁹⁷ OEHHA, 1999, *Public Health Goal for Chromium in Drinking Water*, Office of Environmental Health Hazard Assessment, Feb. 1999.

¹⁹⁸ Andrew Blankenstein, *Calls for Reducing Chromium Levels in Water Go Unheaded*, L.A. TIMES, Aug. 20, 2000, at B1.

¹⁹⁹ *Health Effects of Chromium IV contamination of Drinking Water, Before the CA Leg. J. Informational Hearing of the S. Comm. on Health and Human Services and S. Comm. on Natural Resources and Wildlife and Assemb. Comm. on Environmental Safety and Toxic Materials*, at 8 (Oct. 24, 2000).

²⁰⁰ Andrew Blankstein, *Dispute Hampers Cleanup of Wells; Environment: In 1998, Officials urged a crackdown on levels of chromium 6, but regulations have been delayed because experts disagree over health risks*, L.A. TIMES, Aug. 20, 2000, Metro at B1, available at <http://www.lexis.com>.

²⁰¹ Andrew Blankenstein, *Calls for Reducing Chromium Levels in Water Go Unheaded*, L.A. TIMES, Aug. 20, 2000, at B1.

²⁰² OEHHA, 1999, *Public Health Goal for Chromium in Drinking Water*, Office of Environmental Health Hazard Assessment, Feb. 1999.

²⁰³ *Id.*

7.2% figure on which CDHS based the chromium MCL.²⁰⁴ CDHS determined that before setting a new chromium MCL, it needed to conduct more tests to determine the actual levels of chromium 6 in California's water systems.²⁰⁵ Accordingly, CDHS adopted regulations to require statewide monitoring by water systems for chromium 6 effective January 2001.²⁰⁶

D. The Public Reaction

1. Glendale's Chromium 6 Fears

As discussed earlier, the movie *Erin Brockovich*, like *Silent Spring* and *Love Canal* before it, brought mainstream attention on the potential health effects of chromium 6.²⁰⁷ Prior to the movie's release, few people gave chromium 6 much thought.²⁰⁸ Now even CDHS acknowledges the widespread impact of *Erin Brockovich* in publicizing chromium and bringing "press and political attention" that has raised "public awareness and concern."²⁰⁹ Despite assurances from both EPA and CDHS that chromium 6 poses no significant health effects when ingested through drinking water, many in the public now believe otherwise. One Southern California community in particular has been concerned with the health effects of chromium 6 in its drinking water.²¹⁰

Glendale, located in the San Fernando Valley near Los Angeles, is home to approximately 200,000 people.²¹¹ Since early 2000, many of Glendale's residents and officials have been concerned with the amounts of chromium 6 in their drinking water.²¹² People in the community began to be concerned when tests detected varying amounts of chromium 6 in

²⁰⁴ *Health Effects of Chromium IV Contamination of Drinking Water*, Joint Informational Hearing, (Oct. 24, 2000)(statement of David P. Spath, California Dept. of Health Services).

²⁰⁵ *Id.*

²⁰⁶ Office of Environmental Health Hazard Assessment, Public Information—Fact Sheets, at http://www.oehha.ca.gov/public_info/facts/chrom6facts.html, see CAL. CODE REGS. tit. 22 § 64450 (2003).

²⁰⁷ See discussion supra.

²⁰⁸ Charles F. Bostwick, *Chromium 6 Dangers Now Well-Known*, S. F. CHRON., Jan. 14, 2001, available at <http://www.lexis.com>.

²⁰⁹ CA Dept. of Health Services, Chromium –6 in Drinking Water: Background Information, at <http://www.dhs.ca.gov/ps/ddwem/chemicals/Chromium6/Cr+6backgroundinfo.htm> (last modified Apr. 05, 2002).

²¹⁰ Rene Sanchez, *Fear of Toxin in Tap Water Rocks California Valley*, WASH. POST, Dec. 8, 2000, at A3, available at <http://www.lexis.com>.

²¹¹ City of Glendale Website, at <http://www.ci.glendale.ca.us/about/index.html> (last modified 2002) (on file with author).

²¹² Jennifer Hamm, *Glendale Water Safe, City Says; Chromium 6 levels not alarming, tests indicate*, DAILY NEWS OF L.A., Sept. 19, 2000, available at <http://www.lexis.com>.

30 out of 80 ground water wells throughout the San Fernando Valley.²¹³ Although other California wells showed detectable levels of total chromium,²¹⁴ the San Fernando Valley has been a “hot zone for chemical contamination.”²¹⁵ Decades of industrial activity in the area have resulted in the contamination of shallow and deep aquifers with pollutants including chemical solvents.²¹⁶ In 1986, parts of Burbank, Glendale, and North Hollywood were all declared federal Superfund cleanup sites.²¹⁷

The San Fernando Valley Basin is home to the major aquifer for residents of Los Angeles, Glendale, and Burbank.²¹⁸ In 2000, total chromium levels in San Fernando Valley wells used by the Department of Water and Power (DWP) ranged from trace amounts to 30 parts per billion.²¹⁹ Although these levels were lower than the state standard, past experience demonstrated that they could increase rapidly. For instance, a well in Burbank went from 15 parts per billion in 1995 to 110 parts per billion in 1999.²²⁰ Sampling of wells in the San Fernando Valley also indicated a ratio of chromium 6 to total chromium of between 61% and 99%.²²¹ In response to the chromium contamination in area wells, Glen-

²¹³ *Health Effects of Chromium IV contamination of Drinking Water, Before the CA Leg. J. Informational Hearing of the S. Comm. on Health and Human Services and S. Comm. on Natural Resources and Wildlife and Assemb. Comm. on Environmental Safety and Toxic Materials*, at 7 (Oct. 24, 2000).

²¹⁴ *Health Effects of Chromium IV contamination of Drinking Water, Before the CA Leg. J. Informational Hearing of the S. Comm. on Health and Human Services and S. Comm. on Natural Resources and Wildlife and Assemb. Comm. on Environmental Safety and Toxic Materials*, at 8 (Oct. 24, 2000) (CDHS found that “water sources in 48 out of California’s 58 counties have detectable levels of total chromium”).

²¹⁵ Andrew Blankstein, *Governor Signs Bill Speeding Water Testing; Health: Law requires state agency to report on chromium 6 levels in valley wells and assess statewide safety risk within two years*, L.A. TIMES, Sept. 30, 2000, Metro at B1, available at <http://www.lexis.com>.

²¹⁶ California Regional Water Quality Control Board: Los Angeles Region, Special Board Meeting on Chromium Contamination: Staff Report, Glendale CA. Nov. 13, 2000.

²¹⁷ *Id.*

²¹⁸ *Health Effects of Chromium IV contamination of Drinking Water, Before the CA Leg. J. Informational Hearing of the S. Comm. on Health and Human Services and S. Comm. on Natural Resources and Wildlife and Assemb. Comm. on Environmental Safety and Toxic Materials*, at 7 (Oct. 24, 2000).

²¹⁹ Andrew Blankstein, *Dispute Hampers Cleanup of Wells; Environment: In 1998, Officials urged a crackdown on levels of chromium 6, but regulations have been delayed because experts disagree over health risks*, L.A. TIMES, Aug. 20, 2000, Metro at B1, available at <http://www.lexis.com>.

²²⁰ *Id.*

²²¹ California Regional Water Quality Control Board: Los Angeles Region, Special Board Meeting on Chromium Contamination: Staff Report, Glendale CA. Nov. 13, 2000.

dale City Manager Jim Starbird called for testing in Glendale's wells.²²² One test in February of 2000 indicated that one well in Glendale contained 61 parts per billion of chromium.²²³

The chromium 6 contamination in Glendale likely resulted from the San Fernando Valley's long history of being an aerospace and industrial center, because of industry's use of chromium to harden steel and make paint pigments.²²⁴ In industrial areas, chromium 6 can get into the ground water by accidental or intentional discharges.²²⁵ Glendale's water was likely contaminated by intentional discharges.²²⁶ City records show that high levels of water tainted with chromium 6 were discharged between 1945 and the mid-1960's into storm drains that flow to the Los Angeles River.²²⁷ Furthermore, evidence suggests that some industries may have dumped water tainted with chromium 6 directly into the San Fernando Valley aquifer beginning in the 1940's.²²⁸ Therefore, Glendale may have a valid reason for being concerned with the levels of chromium 6 in its drinking water.

At the heart of Glendale's chromium 6 concerns lies a water treatment plant known as the "Glendale Operable Unit."²²⁹ This treatment plant was part of a remedial measure for a Superfund site in the San Fernando Valley.²³⁰ The Superfund listing resulted from a water quality inquiry from the CDHS in 1980.²³¹ CDHS requested all major groundwater users to conduct tests for the presence of certain industrial chemicals in the drinking water.²³² The groundwater in the San Fernando Valley tested positive for contamination by volatile organic compounds (chemical solvents).²³³ Specifically, the chemicals perchloroethylene (PCE) and trichloroethylene (TCE) were detected in concentrations

²²² Jennifer Hamm, *Glendale Water Safe, City Says; Chromium 6 levels not alarming, tests indicate*, DAILY NEWS OF L.A., Sept. 19, 2000, available at <http://www.lexis.com>.

²²³ *Id.*

²²⁴ Andrew Blankstein, *Dispute Hampers Cleanup of Wells; Environment: In 1998, Officials urged a crackdown on levels of chromium 6, but regulations have been delayed because experts disagree over health risks*, L.A. TIMES, Aug. 20, 2000, Metro at B1, available at <http://www.lexis.com>.

²²⁵ *Id.*

²²⁶ Andrew Blankstein, *Chromium 6 Released into L.A. Rivers for Year*, L.A. TIMES, Oct. 30, 2000, at A1, available at <http://www.lexis.com>.

²²⁷ *Id.*

²²⁸ Andrew Blankstein, *Lockheed Linked to Chromium 6 Pollution*, L.A. TIMES, Jan. 21, 2001, Metro at B1, available at <http://www.lexis.com>.

²²⁹ California Regional Water Quality Control Board: Los Angeles Region, Special Board Meeting on Chromium Contamination: Staff Report, Glendale CA. Nov. 13, 2000.

²³⁰ *Id.*

²³¹ *Id.*

²³² *Id.*

²³³ *Id.*

higher than the state and federal maximum contaminant levels.²³⁴ Consequently, on June 6, 1986, EPA listed the San Fernando Valley Area as a Superfund site.²³⁵

Pursuant to the Superfund program, EPA required polluters to build the treatment plant (Glendale Operable Unit) at a cost of roughly \$25 million,²³⁶ to clean up a thirteen square mile plume of the chemicals PCE and TCE.²³⁷ Upon the completion of the water treatment plant, EPA wanted Glendale to begin taking drinking water from the plant.²³⁸ However, water from the treatment plant had chromium 6 levels as high as 15 parts per billion.²³⁹ On the other hand, Glendale's imported water supply from the Metropolitan Water District (MWD), which constitutes approximately 85% of the city's water supply,²⁴⁰ contained less than 1 part per billion of chromium 6.²⁴¹

Glendale expressed concern to EPA regarding the chromium 6 levels in its water because the treatment plant was designed to treat the groundwater for PCE and TCE contamination and not for chromium 6.²⁴² Glendale also requested more time to assess the risks from chromium 6 before supplying it to area homes.²⁴³ EPA refused Glendale's request, stating, "testing of the treatment system shows that the treated water will meet or be below all drinking water standards."²⁴⁴ In response, Glendale officials indicated that instead of delivering the water to its residents, it would dump the water into the Los Angeles River until it knew more about the health effects of ingesting chromium 6.²⁴⁵

²³⁴ Andrew Blankstein, *EPA Rejects Glendale Delay in Pumping Treated Water*, L.A. TIMES, Oct. 14, 2000, Metro at B18, available at <http://www.lexis.com>.

²³⁵ 51 Fed. Reg. 21054.

²³⁶ Michael Gougis, *How state scientists botched a key calculation on how much toxic chrome 6 should be in our drinking water*, NEW TIMES L. A., Oct. 26, 2000, available at <http://www.lexis.com>.

²³⁷ Andrew Blankstein, *EPA Rejects Glendale Delay in Pumping Treated Water*, L.A. TIMES, Oct. 14, 2000, Metro at B18, available at <http://www.lexis.com>.

²³⁸ Andrew Blankstein, *EPA Rejects Glendale Delay in Pumping Treated Water*, L.A. TIMES, Oct. 14, 2000, Metro at B18, available at <http://www.lexis.com>.

²³⁹ Andrew Blankstein, *End to Water-Dumping Sought*, L.A. TIMES, Nov. 17, 2001, California at 6, available at <http://www.lexis.com>.

²⁴⁰ Jones & Stokes, Final Environmental Impact Report for Oakmont View Phase V, Volume 1: Final EIR Text, Prepared for the City of Glendale Planning Commission, 3J-3 (Feb. 2002), available at <http://www.ci.glendale.ca.us> (last modified 2002) (on file with author).

²⁴¹ Andrew Blankstein, *End to Water-Dumping Sought*, L.A. TIMES, Nov. 17, 2001, California at 6, available at <http://www.lexis.com>.

²⁴² Michael Gougis, *How state scientists botched a key calculation on how much toxic chrome 6 should be in our drinking water*, NEW TIMES L. A., Oct. 26, 2000, available at <http://www.lexis.com>.

²⁴³ Andrew Blankstein, *EPA Rejects Glendale Delay in Pumping Treated Water*, L.A. TIMES, Oct. 14, 2000, Metro at B18, available at <http://www.lexis.com>.

²⁴⁴ *Id.*

²⁴⁵ *Id.*

Glendale subsequently followed through with its threat and began dumping the treated water into the Los Angeles River.²⁴⁶ Mel Blevins, the court-appointed watermaster for the upper Los Angeles River area, argued that Glendale was wasting water because the treatment plant had been treating the discharged water at a high cost.²⁴⁷ He estimated that more than one million dollars worth of water had been wasted in the first three months of the plant's operation because of the dumping.²⁴⁸

Glendale now confronts policy makers who question whether water containing chromium 6 poses high enough health risks to justify its waste. Even the county's own water-master stated that "[f]or many, many years, people have been drinking the water. . . I don't see a lot of people sick."²⁴⁹ The real question, however, is whether residents of Glendale should be forced to serve as involuntary subjects in an epidemiological study on the health risks of drinking water laced with chromium 6.

On November 9, 2001, Mel Blevins filed suit in Los Angeles County Superior Court challenging Glendale's dumping of tens of thousands of gallons of treated well water into the Los Angeles River.²⁵⁰ Threatened with legal action and multi-million dollar fines, Glendale agreed to allow higher levels of chromium 6 into its water supply for the time being.²⁵¹ Under Glendale's agreement with EPA, the city will deliver the treated water to its residents at a capped level of five ppb of chromium 6.²⁵² In a recent report, however, Blevins indicated that migrating plumes of chromium 6 could result in the closure of area wells if the groundwater is not cleaned up.²⁵³ Meanwhile, Glendale must wait while regulators attempt to determine what constitutes safe levels of chromium 6 in drinking water.

²⁴⁶ Jean Guccione, *EPA Extends deal allowing Glendale to dump its water*, L.A. TIMES, Jan. 5, 2001, Metro at B3, available at <http://www.lexis.com>.

²⁴⁷ California Regional Water Quality Control Board: Los Angeles Region, Special Board Meeting on Chromium Contamination: Staff Report, Glendale CA. Nov. 13, 2000.

²⁴⁸ Jean Guccione, *EPA Extends deal allowing Glendale to dump its water*, L.A. TIMES, Jan. 5, 2001, Metro at B3, available at <http://www.lexis.com>.

²⁴⁹ Andrew Blankstein, *Dispute Hampers Cleanup of Wells; Environment: In 1998, Officials urged a crackdown on levels of chromium 6, but regulations have been delayed because experts disagree over health risks*, L.A. TIMES, Aug. 20, 2000, Metro at B1, available at <http://www.lexis.com>.

²⁵⁰ Andrew Blankstein, *End to Water-Dumping Sought*, L.A. TIMES, Nov. 17, 2001, California at 6, available at <http://www.lexis.com>.

²⁵¹ Helen Gao, *Glendale Backs Dones on Water; Plant change to allow level of chromium 6 to rise in city*, DAILY NEWS OF L.A., Jan. 31, 2002, at N3, available at <http://www.lexis.com>.

²⁵² *Id.*

²⁵³ Kerry Cavanaugh, *Chromium 6 Cleanup Urged*, DAILY NEWS OF L.A., Feb. 27, 2003, News at N3, available at <http://www.lexis.com>.

2. The “Political Landmine” of Chromium 6 Regulation

From the perspective of a California policy maker, the chromium 6 debate coupled with the “*Erin Brockovich* effect” on the public’s psyche can be a political landmine. On the one hand, policy makers face a great deal of uncertainty regarding the toxicity of ingested chromium 6; on the other, policy makers know one thing for certain—more stringent standards are costly.

Implementing more stringent chromium standards is costly for primarily two reasons—water treatment costs and water replacement costs.²⁵⁴ First, most existing treatment plants are incapable of treating groundwater to meet more stringent chromium 6 standards without major operational modifications. Water treatment alternatives for lessening the chromium 6 contamination in the water include: reverse osmosis, ionization, and water blending.²⁵⁵ More stringent standards would force numerous groundwater wells not meeting the standards to close down until improvements were made.²⁵⁶ These improvements would be time consuming and costly.²⁵⁷ Mel Blevins estimates that each city could be forced to spend as much as \$10 million on chromium 6 treatment plants and an additional \$5 million per year to run them.²⁵⁸

Meanwhile, since renovation takes time, current local well water users would be required to pay higher costs for imported water from MWD.²⁵⁹ For example, some water officials speculate it would cost \$47 million a year for replacement water to serve just the city of Los Angeles if regulators lower the current chromium standard to the OEHHA current recommended public health goal of 2.5 parts per billion.²⁶⁰ This represents about a \$5 per month increases for the typical water customer.²⁶¹

²⁵⁴ See *Health Effects of Chromium IV contamination of Drinking Water, Before the CA Leg. J. Informational Hearing of the S. Comm. on Health and Human Services and S. Comm. on Natural Resources and Wildlife and Assemb. Comm. on Environmental Safety and Toxic Materials*, at 8 (Oct. 24, 2000).

²⁵⁵ *Id.*

²⁵⁶ Andrew Blankstein, *Dispute Hampers Cleanup of Wells; Environment: In 1998, Officials urged a crackdown on levels of chromium 6, but regulations have been delayed because experts disagree over health risks*, L.A. TIMES, Aug. 20, 2000, Metro at B1, available at <http://www.lexis.com>.

²⁵⁷ *Id.*

²⁵⁸ Andrew Blankstein, *Lockheed Linked to Chromium 6 Pollution*, L.A. TIMES, Jan. 21, 2001, Metro at B1, available at <http://www.lexis.com>.

²⁵⁹ See *Health Effects of Chromium IV contamination of Drinking Water, Before the CA Leg. J. Informational Hearing of the S. Comm. on Health and Human Services and S. Comm. on Natural Resources and Wildlife and Assemb. Comm. on Environmental Safety and Toxic Materials*, at 8 (Oct. 24, 2000).

²⁶⁰ *Id.*

²⁶¹ Andrew Blankstein, *Dispute Hampers Cleanup of Wells; Environment: In 1998, Officials urged a crackdown on levels of chromium 6, but regulations have been*

Therefore, a more stringent standard would have an economic impact on local utilities and consumer's rates.

Proponents of a more stringent standard argue that the health benefits of lowering allowable chromium 6 levels would greatly outweigh the costs. However, no one knows for certain exactly what those health benefits would be.²⁶² Furthermore, the California standard for total chromium of 50 parts per billion is already significantly lower than the national standard of 100 parts per billion. Therefore, policy makers confront a difficult task when public outcry and fear following *Erin Brockovich* demands more stringent chromium 6 standards. The controversy in Glendale exemplifies all of these problems and shows how difficult it can be for regulators to regulate a substance shrouded in scientific uncertainty.

E. Regulatory Response

The regulatory response following *Erin Brockovich* parallels the response following *Silent Spring* and Love Canal. The recent outcry in Glendale regarding chromium 6 has caught the attention of politicians at the state and federal levels. The California state legislature and the U.S. Congress have enacted laws that directly address chromium 6 contamination in our drinking water. One set of laws specifically addresses the chromium 6 contamination in the San Fernando Valley.²⁶³ The second attempts to establish new primary state and federal drinking water standards for chromium 6.²⁶⁴ *Erin Brockovich* has served as the catalyst toward the enactment of these laws.²⁶⁵ In California, for example, *Erin Brockovich* "helped fuel public outrage that contributed to the so-called Brockovich Bill."²⁶⁶

1. California Legislation

In response to the existing uncertainty about the health effects of chromium 6 and the public's outcry, California has enacted several laws dealing with the problem of chromium 6 in its drinking water. In 2000,

delayed because experts disagree over health risks, L.A. TIMES, Aug. 20, 2000, Metro at B1, available at <http://www.lexis.com>.

²⁶² See generally discussion above in section on the *Uncertainty Regarding the Health Effects of Chromium 6*.

²⁶³ See H.R. Rep. No. 107-272 (2001); S.B. 2127, 2000 Leg., Reg. Sess. (Ca. 2000).

²⁶⁴ See S. 698, 107th Cong. (2001); S.B. 351, 2001 Leg., Reg. Sess. (Ca. 2001).

²⁶⁵ Charles F. Bostwick, *Chromium 6 Dangers Now Well Known*, S. F. CHRON., Jan. 14, 2001, at A20, available at <http://www.lexis.com>.

²⁶⁶ Gary Polakovic, *Seeing a Greener Big Screen; 'Erin Brockovich' has Plenty of Company as Films Increasingly Cast Polluters as the Villain*, L.A. TIMES, Mar. 27, 2001, at A1, available at <http://www.lexis.com>.

California enacted Senate Bill 2127²⁶⁷ and in 2001, California enacted Senate Bill 351.²⁶⁸ Sponsored by then State Senator Adam Schiff, Senate Bill 2127 deals directly with the chromium 6 contamination in the San Fernando Valley Basin.²⁶⁹

Signed into law by Governor Gray Davis on September 29, 2001, Senate Bill 2127 contains several chromium-6 related requirements. First, it requires CDHS to “determine the levels of [chromium 6] in the drinking water supplied by the public water systems in the San Fernando Basin aquifer.”²⁷⁰ Second, it requires CDHS in consultation with the Office of Environmental Health Hazard Assessment, to “assess the exposures and risks to the public” due to the levels of chromium 6 found in the drinking water.²⁷¹ Finally, the bill required CDHS to report its findings to the Governor and the legislature no later than January 1, 2002.²⁷²

The second piece of legislation dealing with chromium in California, Senate Bill 351, became law on October 9, 2001.²⁷³ Sponsored by State Senator Deborah Ortiz, Senate Bill 351 requires CDHS to adopt a primary drinking water standard for chromium 6 on or before January 1, 2004 and to provide the legislature with a report on its progress in developing a standard by January 1, 2003.²⁷⁴ The legislative history of Senate Bill 351 cites *Erin Brockovich* specifically as one of the motivations for the law,²⁷⁵ noting that the “public concern . . . (has) been heightened because of the unusual circumstances surrounding a federal Superfund project in the San Fernando Valley and because of last year’s popular film, ‘Erin Brockovich.’”²⁷⁶ Therefore, *Erin Brockovich* has already had an impact on California’s regulation of chromium 6.

2. Federal Legislation

The federal legislature has also taken steps to address the public’s concern about chromium 6 contamination in the drinking water supply. In 2001, the federal government allocated \$750,000 toward a new treatment plant and further study of technologies to remove chromium 6 from the drinking water in Glendale.²⁷⁷ Also, in April of 2002, xRepresenta-

²⁶⁷ S.B. 2127, 2000 Leg., Reg. Sess. (Ca. 2000).

²⁶⁸ S.B. 351, 2001 Leg., Reg. Sess. (Ca. 2001).

²⁶⁹ S.B. 2127, 2000 Leg., Reg. Sess. (Ca. 2000).

²⁷⁰ *Id.*

²⁷¹ *Id.*

²⁷² *Id.*

²⁷³ S.B. 351, 2001 Leg., Reg. Sess. (Ca. 2001).

²⁷⁴ *Id.*

²⁷⁵ See eg. *Hexavalent Chromium: Drinking Water Standards: hearing on S.B. 351 Before the Senate Floor*, 2001 Leg., Reg. Sess. (Ca. 2001).

²⁷⁶ *Id.*

²⁷⁷ See H.R. Rep. No. 107-272 (2001) (“\$750,000 to the City of Glendale, California . . . for a research study and pilot treatment plant focused on the removal of chromium

tive Adam Schiff requested that Congress allocate an additional \$2.25 million to help finish the study and build the plant.²⁷⁸ Congress has also attempted to take measures to regulate chromium 6 directly.²⁷⁹

On April 4, 2001, Senators Barbara Boxer, D-CA, and Harry Reid, D-NV, introduced Senate Bill 698 to amend the Safe Drinking Water Act to designate chromium 6 as a contaminant, and to establish a maximum contaminant level for chromium 6.²⁸⁰ In her remarks introducing the Bill, Senator Boxer cited *Erin Brockovich* as "making front page news of the substance hexavalent chromium . . . that until last year had only received attention from the scientific community."²⁸¹ She further urged Congress to enact the "vitally important health safety measure" so that more can be known about the health effects of chromium 6.²⁸² Therefore, Congress has also recognized the impact of *Erin Brockovich* in stimulating new national water quality regulations for chromium 6.

IV. CONCLUSION

The true lasting impact of *Erin Brockovich* on the regulation of chromium 6 remains to be seen. Only time will tell if *Erin Brockovich* and its portrayal of chromium 6 contamination in a small town's groundwater will be considered a pivotal moment in influencing water quality regulation. *Erin Brockovich*, thus far, has followed the recipe for shaping toxics policy displayed in *Silent Spring* and Love Canal. For now, at the very least, the message in *Erin Brockovich* has caught the attention of the public and policy makers.

6 from water."); H.R. 2620, 107th Cong. (2001) (enacted)(final enacted appropriation version allocates the money under the United States Environmental Protection Agency: Science and Technology).

²⁷⁸ *Schiff Seeks \$2.25 Million for Chromium 6 Cleanup*, DAILY NEWS OF L. A., Apr. 11, 2002, at N3, available at <http://www.lexis.com>.

²⁷⁹ S. 698, 107th Cong. (2001).

²⁸⁰ *Id.*

²⁸¹ 147 Cong. Rec. S3450 (2001)(statement of Sen. Boxer).

²⁸² *Id.*

