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CHEMICAL AND ELECTROMAGNETIC EXPOSURES AS DISABILITY BARRIERS: ENVIRONMENTAL  
SENSITIVITY

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### Abstract

This paper proposes that chemical and electromagnetic exposures pose technology-related disability barriers for people who have acquired sensitivities to them, and that these barriers should be integrated into our understanding of disability. I discuss pervasive chemical and electrical exposures as products of industrialism that first engender impairments and then act as disability barriers to those who develop intolerance to them. I also remark on unique aspects of environmental sensitivities in the context of the social model.

Keywords: Multiple chemical sensitivity; chemical sensitivity; chemical intolerance; chemical hypersensitivity; electrical hypersensitivity

### Chemical and Electromagnetic Exposures as Disability Barriers: Environmental Sensitivity

In this paper I propose that chemical and electromagnetic exposures are causes of impairment, then subsequently, disability barriers to participation in industrial culture. I explore these exposures primarily within the social model of disability. I discuss some current critiques and suggested extensions of this model, and mention some unique aspects of chemical and electromagnetic barriers, which first impair and then disable persons within industrial culture.

Though disability pre-dated industrialization, industrialization changed the face of work and exposed workers to new dangers. Oliver (1990) stated that the able-bodiedness concept emerged in relation to industrial machinery and factory-imposed discipline/wage labor. Disability was the “pathology” that prevented a portion of the population from plugging into wage labor. Though Finkelstein (2005) hoped that emergent technology would allow for opportunity and liberation for disabled people, Barnes, Mercer and Shakespeare (2005) say that “. . . the amount and variety of impairment rises as a society becomes technologically and economically complex and ‘advanced’” (p. 56) and cite an unsafe environment as one of the major causes of industrial disease and injury.

#### *The Impairment*

One characteristic of all modern public spaces in industrialized countries is that occupants are increasingly exposed to a myriad of chemicals, even if chemical use is not related directly to an establishment’s major activity. Abberley (1987), while making the point that disability is socially and politically engendered, said, “Mirroring impairment caused by the process of production is that attributable to the willing or unwilling consumption of its products” (p. 10). Chemical exposures common to most workplaces and public spaces in industrialized nations include pesticides, paints, vehicular emissions, heating system emissions, copier fumes, offgassing from remodeling or reconstruction, and contaminants from other workers’ personal care products including perfumes. Many of these personal products are largely comprised of heavy industrial solvents. In the US there are now perfumes for children and dogs, and even perfumed vehicle tires that emit fragrance when they roll.

Denison (2007) points out the irony of widespread chemical use juxtaposed with a lack of relevant toxicological knowledge: “. . . government must effectively prove beyond all reasonable doubt that a

chemical poses a risk before it can take any action to restrict its production or use” (p. 5). Only now are industrial countries making efforts to screen chemicals that have been in use for decades, as evidenced by the High Production Volume (HPV) Chemical Challenge in the US, Canada’s Domestic Substances List (DSL) Categorization, and the European Union’s ambitious Registration, Evaluation, Authorization and Restriction of Chemicals (REACH), which will mandate that producers register and provide safety data for approximately 30,000 chemicals (Denison, 2007).

In addition to chemicals, people are commonly exposed to a host of electromagnetic field sources including cell phones and other wireless technology, office equipment, fluorescent lighting, and other sources, which a body of initial studies has implicated as health risks (Firstenberg, 2004a; 2004b).

These modern chemical and electromagnetic exposures are the topic of litigation, media attention (occasionally), and a number of integrative authoritative reports that have implicated them as causes of impairment. For example, a report issued conjointly by Breast Cancer Action and Breast Cancer Fund in the US (Evans, 2006) has pointed out that less than one breast cancer victim in ten has a genetic predisposition toward the disease, and implicated ionizing radiation and the following synthetic chemicals as causal: xenoestrogens (endocrine disruptors) such as Bisphenol-A, Diethylstilbestrol (DES), Polyvinyl chloride (PVC), dieldrin, and household products; solvents; aromatic amines; and 1,3-butadiene from internal combustion engines, petroleum refineries, and tobacco smoke. Others chemicals cites as probable causes include polycyclic aromatic hydrocarbons, organochlorine pesticides, dioxins, and ethylene oxide used to fumigate surgical instruments. Miller (1996; 1999) has proposed that Toxic Induced Loss of Tolerance to chemicals (TILT) is a major cause of modern illness (impairment) and that nothing less than a complete paradigm change on the level of that associated with acceptance of germ theory will generate an understanding of our changing health patterns and the causes of disease.

The present homogenized approach to the products of industrialization includes the presumption that ever increasing toxics in air, food, and water are normal and tolerated by all. “Risk assessment”, however politely worded, belies our apparent concern for “citizens” and acknowledges some collateral damage for some people. But numbers are assumed to be low enough to be “acceptable.” Peter Montague describes this process as thus: “The first thing you do with a risk assessment is decide how many people you are allowed to kill . . . You put a bag limit on citizens” (Hutado, 1999). Even children

are not exempt from this expectation. For example, In the US, though some states now have laws mandating “buffer” zones around schools, most allow agricultural chemicals to be sprayed immediately adjacent to schools with no required safe zone/barrier whatsoever.

Indeed the amount of toxics released in the US is cited in such tremendous amounts (i.e., billions of pounds) that one would assume that someone had forgotten that bodies are living breathing organisms. But everyday life in industrial capitalism now involves imbibing poisons and looking attractive while doing so, “. . . people with capabilities have increasingly turned themselves into shop window dummies . . . whose sole purpose is displaying a commodity for sale” (Finkelstein, 2005, p. 20).

Although some health advocates and researchers in the US have drawn considerable attention to children’s environmental health problems (Center for Children’s Health and the Environment; Transande, Landrigan, & Schechter, 2005), the likelihood of timely policy or paradigm change does not appear to be good in industrial capitalism. Environmental laws in the US have been weakened considerably by the former Bush administration despite the urgency of environmental indicators and increasing industrial accidents and toxic torts. Hence in industrial countries there is a disconnect between the toxicology literature (which has in some cases found negative effects on life forms from exposures as low as one millionth of the allowable exposure) and public policies and behaviors. For example, pregnant women are advised by the American Medical Association not to eat “commercial fruits and vegetables” treated with pesticides. Yet organic food is difficult to find and expensive, and the US Food and Drug Administration (FDA) makes continual efforts to weaken organic standards in the interest of agribusiness. Oliver (1990) cites Borsay (1986) that “the same societal forces which manufacture disability also mitigate against a structural response” (p. 97) and this resonates particularly in regard to chemicals and electromagnetic frequencies (EMFs).

Chemical and electromagnetic exposures have changed radically the quality of life for those who are victims of accidents, heavy air emissions, and low-level chemical exposures in the workplace. Accidents are exemplified in the US by the exposure of civilians to unsafe levels of toxins in the vicinity of the Twin Towers on 9/11 despite government’s assurances that the vicinity surrounding the terrorist attack was safe. Johnson and Starzman (2006) have examined impairment effects in a large variety of persons exposed to the asbestos and other toxic-laden debris from the collapse of the World Trade

Center through interviews with rescue and clean-up workers, persons with apartments in the vicinity (whose homes became contaminated with toxic dust), and persons who escaped the catastrophe but were still temporarily exposed. The more extensive the exposure, the more serious and far-reaching are the resultant health effects, with many persons completely disabled through serious breathing difficulties, pneumonia, debility, and inability to expend any physical energy or engage in work.

Some of these people who have had very large chemical exposures and others who have experienced lower-level chronic exposures have become sensitized to low levels of chemicals and register symptoms upon re-exposure with a spreading of chemical triggers over time (Ashford & Miller, 1998; Randolph & Moss, 1982). This impairment has been referred to by a number of labels, including multiple chemical sensitivity (MCS), chemical sensitivity (CS), environmental sensitivity (ES), chemical hypersensitivity, Toxic-Induced Loss of Tolerance (TILT), chemical poisoning, environmental illness (EI), idiopathic environmental intolerance (IEI), and chemical injury (CI). The condition's validity, the proper label, and causality have all been the subject of discussion and controversy and the proposed name often reflects the bias of the user. E.g., chemical injury puts the blame on chemical exposures (a barrier approach), while IEI suggests that there is something unusual about the experiencer (medical/psychogenic approach). Electrical hypersensitivity (EHS) is less understood and sometimes associated with chemical sensitivity, or may exist independently. In this paper I will use the terms chemical sensitivity, electrical hypersensitivity, and environmental sensitivity (ES) (to include both chemical and electrical sensitivities).

Household population surveys have identified between 12.6% and 33% of the U.S. population as chemically sensitive (Caress & Steinemann, 2003; Meggs, Dunn, Bloch, Goodman, & Davidoff, 1996; Voorhees, 1999), with 2% reporting having lost their jobs because of sensitivities (Neutra, Kerutzer, & Lashuay, 1999). Symptoms of chemical sensitivity involve multiple organ systems, range in severity, and include headache, confusion, dizziness, respiratory difficulties, eye problems, digestive disorders, cardiovascular effects, fatigue, and many others (Caress & Steinemann, 2003; Sears, 2007). Major incitants include combustion products, pesticides, paints, perfumes, cleaners, ink, etc. Many offending substances contain solvents such as toluene, benzene, and other petrochemical-based products. In fact, Theron Randolph, the founder of Environmental Medicine in the U.S. called chemical sensitivity "the

petrochemical problem” (Randolph & Moss, 1982). About 3% of the U.S. population reports electrical hypersensitivity (Levallois, Neutra, Lee, & Hristova 2001).

A recent review of the medical evidence for environmental sensitivity commissioned by the Canadian Human Rights Commission concludes that, “The balance of scientific evidence and experience indicates that environmental sensitivities generally arise from physiological causes, although there are many neurological and psychological consequences” (Sears, 2007, p. 26). Neurological or psychiatric effects may be direct toxicological reactions to incitants or long-term consequences of living with a disabling illness for which almost no help, accommodation, or benefits exist (Gibson et al., 1996). Saito et al. (2005) provided validation that chemical exposures caused impairment in four persons with MCS, whose symptoms occurred only during chemical exposures, as detected by active and passive environmental air sampling. Hence just as Hughes (2002) pointed out that new “collateral damage” from capitalist production grew the pool of disabled people, I propose that modern everyday chemical and electromagnetic exposures are generating and increasing the incidence of environmental sensitivity.

### *The Disabling Barriers*

Thomas (2004) pointed out that the “landscape of social exclusion” is barriers to education, work, transport, housing, health, welfare, and recreation. Just as Hughes says that production lines were “closed to ‘cripples,’ any and all public spaces are at risk of being off-limits to those who must observe chemical avoidance. The presence of chemicals and electromagnetic fields in virtually every public environment excludes environmentally sensitive people from public access and disables them through isolation and loss of resources. The cultural failure to consider chemicals and EMFs as participation barriers leads to discrimination in work, medical care, and community access; and problems with finances, relationships, and identity for people attempting to avoid exposures (Gibson et al., 1996; Gibson, Cheavens, & Warren, 1998; Gibson et al., 2005). Gibson et al. (1996) found that over two thirds of 268 persons with MCS had lost employment as a result of their impairments and only 7% were working in conditions that they considered safe. Work accommodations are very difficult to come by (Gibson & Lindberg, 2007), and people become caught in a downward financial spiral. In the community, persons are excluded from churches, malls, movies, and restaurants, and almost half report being

unable to go anywhere that they will encounter perfumes (Gibson et al., 1996). The spraying of poisons for insect control keeps persons indoors; toxics in cleaners and other commercial products keep people out of grocery stores; pesticides in parks prohibit park use; and perfumes, cleaners and pesticides are barriers to continued education (Gibson et al., 1996). The effects/life impacts of ES include joblessness, financial destitution, homelessness, ostracism from culture and family, lessened social support, low life satisfaction, and loss of identity (Doiron, 2007; Gibson, et al., 1996; Gibson & Lindberg, 2007; Gibson et al., 2005; Gibson, White, & Rice, 1997; McCormick, 2001; Zwillinger, 1997). Gibson et al. (1996) found that for some persons, quality of life became so poor that 20% of 305 persons had considered suicide, 8.2% had made a plan, and 3.3% had made an attempt.

Physicians' offices are not exempt from the use of toxics, including perfumes, pesticides, anesthetics, carpet, petrochemical heating and other incitants. That persons avoid even urgent medical and dental care attests to the seriousness of the barriers encountered. Engel, Gibson, Adler, and Rice (1996) found that people with MCS delayed receiving medical and dental work because they could not tolerate the office exposures, and practitioners either refused to accommodate them or labeled their condition as psychiatric. In addition some persons had procedures such as root canals, tooth extractions, bronchoscopies and colonoscopies without anesthetics, due to their intolerances. I recently learned of a woman who cannot tolerate the office of her gynecologist and consequently, has this very personal and intrusive examination outside the medical office in her car.

Begum (1996) found that many medical visits in her sample of disabled women were for medical reports and service authorization and pointed out that "The medical model of disability means that GPs are often required to have an input on matters which many people would argue should not be in the domain of the medical profession." (p. 159). This medical mandate, combined with the lack of knowledge of toxic-induced illness among providers, poses serious obstacles to social integration for people with ES and contributes to the disabling effects of chemical and electromagnetic barriers.

The downward spiral of increased sensitivity and loss of access and resources eventuates for many in living in cars, trailers, tents, or on others' porches. Johnson (2000) and Zwillinger (1997) have published photoessays of persons disabled by chemical barriers living in these "unusual circumstances." Despite the urgency of the situation, very little help has been forthcoming for this population. Doiron



(2007) found a lack of services and a lack of understanding by service providers regarding this population. Hence people are excluded from view, occasionally to “*dys-appear*” (Hughes, 2002) back into public wearing masks or carrying air purifiers, thus eliciting stigma from others. The process of cultural exclusion is invisible to others, who make attributions about the excluded person’s mental health and character. Mandatory homogeneity of appearance is threatened by not only props such as masks, but to a perhaps lesser degree by persons’ discontinuance of the poison products of culture, such as perfumes, hair dyes, polyester clothing, and other corporate requirements in the workplace and elsewhere.

The pervasive exposures that first impair and then disable sensitized people are present even in advocacy centers. Oliver construes the Independent Living Movement as a “principal dimension of the disability movement.” Yet it is largely unavailable to chemically and electrically hypersensitive people. Gibson (2006) found that services to people with ES provided by Centers for Independent Living (CILs) in the US and Canada were uneven, unpredictable, and depended upon the bias of the advocate the applicant dealt with. Part of the problem with CIL access was fragranced advocates. Hence even *people themselves* (including other disabled people) with their fragrances, dry cleaned clothes, and active cell phones, have become barriers to those with chemical and electrical sensitivities. In a culture where “Worth is reduced to appearance, performance, and superficial concepts of competence” (Hughes, 2002, p 70), people use the products of technology in an uncritical manner. Siebers (2006) points out that, “In a society of wheelchair users stairs would be non-existent . . .” (p. 174). Likewise, in a more natural culture, many of these toxics would be absent save for interference by imperialist nations exploiting new “markets.”

### *Decontextualization of The Impairment*

In discussing the shortcomings of the British social model of disability and its dichotomous view of impairment (biological) and disability (social oppression due to barriers), Shakespeare and Watson (2002) state, “Understanding these processes of exclusion and discrimination is where the core focus of an empowering disability studies should lie” (p. 22-23). For chemical sensitivity these processes are engendered by the paradigmatic exclusion of chemicals as in any way problematic for health. In the US in

particular, the chemical industry is very prominent, changes in law are much slower than in the EU, and much is at stake in terms of economics should environmental sensitivity be determined to actually exist by powers that be. In the US many look to the American Medical Association (AMA) for validation and education regarding “emerging” impairments. But it is much easier for this industrial capitalism-engendered discipline to use its powers to delegitimize the condition as psychosomatic and preserve business as usual. “In a cultural context viewing poverty as the absence of Western consumption patterns, and the ability to work as a natural resource, a pro-industry bias in health care insures that psychological causes of illness be sought before chemical-related causes” (Gibson, 1997, p. 482). Decontextualized, these technology-induced impairments neither make sense nor have hope of resolving. In discussing women’s life experiences, Kaschak (1992) spoke of drawing an artificial boundary between figure and context; context subsequently disappears - a perfect example of the use of the medical model of disability in not only controlling (Begum, 1996), but orchestrating the cultural response to disabled people’s lives.

When physical impairment *is* acknowledged and attention given to these conditions, the focus is often on the “repair” of the individual. Barnes et al. (2005) discuss the pressure to overcome “disability” through medical and rehabilitative techniques, whilst the environment is depicted as “neutral.” The same assumption of neutrality occurs with environmental sensitivities and even many persons with sensitivities have invested in the search for a cure. People watch with fascination for new pronouncements from prestigious environmental doctors and pay thousands of dollars for experimental interventions (Gibson, Elms, & Ruding, 2003), placing their own behavior squarely within the medical model. Lax (1998) stated that chemical sensitivity must be understood within the context of industrial capitalism and Gibson (1997) described the message of the chemically sensitive person – that chemicals are a source of injury - as a threat to hegemonic ideology: “Because this message threatens the very underpinnings of a capitalist industrialized culture, it necessarily results in that culture's attempt to silence, delegitimize, and pathologize the messenger” (p. 481).

Susan Wendell (2006) pointed out that “. . . many of the ‘special’ resources the disabled need merely compensate for bad social planning that is based on the illusion that everyone is young, strong, healthy, (and, often, male)” (p. 246). Likewise when people request freedom from pesticides they call

into question the unchallenged assumption that exposure to cholinesterase-targeting nerve poisons represents a “neutral” environment. In industrial capitalism chemicals and electromagnetic fields are ubiquitous and the body of the “standard human,” i.e., The young, fit, abstract 160-pound male for whom the built environment is designed, is conceptualized as being impervious to chemical and electromagnetic intrusions. Castleman and Ziem (1988) have provided detailed documentation of corporate influence in the establishment of Threshold Limit Values (TLVs) for chemicals (the maximum level or exposure for a worker during an eight hour work day). Interestingly, the environment is not even chemically safe for this abstract man, as (TLVs) are based on that man at rest despite the fact that no factory jobs are performed at rest. As soon as he moves, his metabolism rises, he imbibes more emissions, and he is exposed to more than the legal limit of that chemical. Most laboratory and on-site testing of solvents has been done with participants in a resting state even though solvent uptake is known to increase during exercise. But, a number of chemicals show performance detriments at levels at or below TLVs even with participants in the resting state: 1,1,1-trichloroethane, tetrachloroethylene, acetone, and styrene. When activity is added, other chemicals show neurological effects at levels lower than in the traditional stationary paradigm: i.e., toluene, xylene (Dick, 1988)

Though toxicology literature evidences a growing body of work that supports connections between toxics and a number of modern diseases such as cancer, neurologic dysfunction, behavior and learning disorders in children, and Parkinsons disease, and suggests connections with other impairments, it seems that not even clear associations such as that between ill health and environmental tobacco smoke (ETS) result in regulation (although several countries have partial or complete bans on smoking in enclosed public places). Likewise numerous published studies of low-intensity radio frequency radiation show EEG and attentional changes (Kolodynski & Koldynska, 1996), increased melanoma (Hallberg & Johansson, 2004), immune effects (Boscol et al., 2001; Chiang et al., 1989), increases in brain cancers (Richardson, Wing, Schroeder, Schmitz-Feuerhake, & Hoffmann, 2005) and an increase in human mortality in vicinities following the initial service of digital phone networks (Firstenberg, 2004a). But cell phone towers and other wireless technology continue to grow.

### *The Social Model of Disability and ES*

Marks (1999) points out that although the social model presents as a general theory of disability focusing on a disabling environment, it preferences barriers to mobility over all others. And Lee (2002) believes that the disability movement involves only a limited range of disabled constituents, omitting groups such as older people, the severely disabled, and persons with learning disabilities.

Environmentally sensitive people comprise a group not conceptualized as disabled except by some activists in the ES community, and, as such, chemical and electrical barriers have received almost no attention in the disability literature. Exceptions are Lipson (2000), and Gibson and Lindberg (2007).

Marks said that “disability” is “negotiated” with the cultural institutions such as with law, work, and medicine. As such, environmental sensitivities are at a very early stage of this process, and consequently suffer from a lack of inclusion regardless of the disability model to which one subscribes.

The social model may offer some future hope for environmentally sensitive people, but to date has not included chemical or electromagnetic barriers in its discussion. But whether the current social analysis could contain and situate ES in disability studies is open to question. Thomas (2002) would like the materialist perspective to be updated with reference to new capitalist economic developments and their influence upon disabled people and asks, “What new divisions, exclusions and dependencies are opened up?” (p. 48). Given the serious presence of the chemical industry in US law, economics, medicine, and other institutions, I believe that we must acknowledge its material influence in regard both to the engendering of sensitivities and the excluding of those who have been rendered sensitive. For example, chemical and electrical technologies are more than barriers to those with sensitivities in that they also pose the threat of further injury. Continued chemical and electrical exposures can exacerbate a condition, sometimes permanently and thus are both barriers and causes of further impairment.

In addition these exposures embody the threat and possibility of creating *new* impairment in persons not previously sensitized. In addressing the sequence from “abled to disabled” Mitchell and Snyder (2006) state that, “To participate in an ideological system of bodily norms that promote some kinds of bodies while devaluing others is to ignore the malleability of bodies and their definitively mutant natures” (p. 212). Chemical sensitivity represents perhaps a new and culturally situated reminder of the

malleability of the body and the forms that it can take. As one example, an Australian farm worker has related his story of becoming quadriplegic as a result of one instance of being directly sprayed by pesticides in the field (Simmons, nd). So, unlike some disabling barriers (e.g., steps), chemicals and electromagnetic exposures are also causes of impairment – the injurious factors that compromised the person’s access and facilitated entry into a disputed category.

It is perhaps significant that persons intolerant of toxics and electromagnetic fields are not seen as disabled in industrial capitalism. Medical providers, disability organizations, and professional journals function within the current market economy as part of the industrial paradigm. Marks (1999) quotes Wendell (1996) that medicine has a tendency to “ignore, minimize the importance of, or deny outright” phenomena of the body it doesn’t understand. Although there has been considerable discussion of environmental sensitivity in some medical and environmental health journals, numerous support groups and informative websites exist, and several hundred US physicians focus on environmental medicine as part of the American Academy of Environmental Medicine, many aspects of industrial culture at large pay little or no heed to the growing numbers of persons who are unable to access resources that others take for granted.

The invisible nature of environmental sensitivity allows others, including those in the disability community, to ignore it. Temporarily able-bodied people are free to pressure people into entering unsafe environments. If out of necessity, loneliness, or exasperation a person ignores his or her own limitations and enters an unsafe environment, this fact is then further barrier to legitimization. Others not privy to the aftereffects then negate the need to reduce the barriers. A frequent example described by many in my research involves running into a grocery store, attempting to avoid the detergent aisle while buying quick necessities, and then getting out and “riding out” the effects. One woman in my life impact research described traveling hundreds of miles to visit family for the holidays, only to be served her meal in the driveway in her van because family members were not willing to forego their perfumes so that she could join them in the house.

Thomas (2004) wants a “deepening of a materialist theorization of disability” and attention to the “psycho-emotional dimensions of disability” (p. 53) and, though some criticize this as giving an opening for ‘personal tragedy’ perspective of disability, says that we ignore important dimensions of disability if

we do not discuss the internal. Thomas uses the term “impairment effects” to discuss the direct effects of particular impairments in contrast with the exclusions and oppressions experienced as a result of impairment. Hughes (2002) says that disability studies has “cut itself off from the possibility of developing a sociology of impairment” (p. 59). I believe that some discussion of impairment effects might be necessary for a full understanding of how barriers operate against persons with ES. There is difficulty in separating completely the impairment from the disability for ES because exposures can permanently exacerbate ES, because of the uniqueness and often invisible nature of the disability, and because the condition fluctuates and is more unstable than some disabilities (though Thomas pointed out that there is fluctuation in functioning for many disabled people). In addition, being that many reported the effects of exposures to be CNS related, and that exposure symptoms often last for two to three days (and more for some individuals), there is repeated mental and physical suffering for many upon exposure.

Shakespeare and Watson (2002) cite Abberley’s assertion that as impairment has social causes, it is part of disabled people’s oppression. Shakespeare and Watson believe that this applies only to some impairments, but for ES, it would seem to apply. These authors would like for all dimensions of the disabled person’s experience to be included in study. ES has characteristics of chronic illness, embodies some personal suffering, and engenders psychological consequences as a result of social isolation, lack of social support, and public ridicule.

I believe that in some instances, personal experience narratives may articulate the footprint of systematic oppression in a way that political facts cannot. For example, in articulating the effects of hormone-disrupting toxics on Arctic peoples, Colborn, Dumanoski and Myers (1997) described the situation of the Inuits on Broughton Island, who carry “the highest levels of PCSs found in any human population except those contaminated in industrial accidents” (p, 108). Members of neighboring communities call them the “PCB people” and refuse to trade with them, which has resulted in the collapse of their local economy. Hence the Broughton Islanders are harmed in a very particular way by industrial pollutants and are at the intersection of politics, health, economics, and disability.

*ES Activism*

Persons with environmental sensitivities have engaged in ambitious activism despite the incongruence of their message with the economics of industrial capitalism. People have formed support groups; educated in communities, hospitals, and workplaces; lobbied legislators; prepared materials for distribution such as brochures, books, articles, and quality educational videos (Johnson & Starzman, 1998, 2000, 2006); created housing projects designed for persons with ES; advocated for fragrance-free access; and contributed to the policies of The Architectural and Transportation Barriers Compliance Board (Access Board), a US federal agency devoted to disability access ("IEQ, 2005). A large number of web-based and in-person advocacy groups exists as does an initial body of literature on the life impacts of the impairment.

*Conclusion*

More so than other impairments, environmental sensitivities seem to implicate the products of technology as culpable and thus must be neutralized as threats to industrial capitalism. This neutralization has taken the form of psychologizing, ignoring, "studying", and delegitimizing. Some attention from the field of disability studies may be instrumental in construing chemical and electromagnetic exposures as barriers and legitimizing a group of persons that has been ignored and excluded from public culture in industrialized nations. Finkelstein (2005) would like the concern regarding disability to be for "emancipation rather than problems in attaining adequate compensation for the possession of a 'disability'" (p. 15). Emancipation for people with "sensitivities" would mean an understanding of the effects of our technologies and precaution in their use. Indeed environmental groups have long advocated for use of "the precautionary principle" in regard to toxics and the principle forms the basis of the response of the EU to environmental problems, e.g., the banning of persistent organic pollutants (POPs).

IN my view, the way forward in legitimizing environmental sensitivities and those who experience them would require the following three-pronged approach to action:

- 1) There must be some provision of safe zones and accommodations for people who currently cannot access even necessities in public areas and private establishments such as health care,

education, and businesses. Susan Molloy, a long-time US disability activist, believes that true integration of persons with ES in all contexts would be very difficult and although separate, these safe access zones would at least allow people with ES to access some services (personal communication). For example, advocacy and health care agencies could have accessible rooms where persons with ES could be seen.

2) Education of medical care providers, advocates, and agency staff is a priority if ES is to be recognized and persons are to receive “services.” Doiron said, “It is important to find ways to educate the leadership in social service agencies so the staff can become informed of such less recognized health issues such as ES/MCS” (p. 138).

3) The context of ES must be understood, including “the multiple impacts of indoor and outdoor pollution and how it plays out in the socio-economic and health arenas” (Doiron, 2007, p. 138). Environmental sensitivities are emerging in a number of differing populations of people including Gulf War Veterans, 9/11 survivors in the US, residents of sick buildings, and those who are exposed to long-term low-level chemicals. Environmental sensitivities should be contextualized as part of a larger problem of dominants’ misuse of air, water, and earth and the resulting environmental degradation, health impairments, and loss of cultural viability for those disenfranchised. I believe that toxic exposure needs to be understood as a broad problem that impairs people in a variety of contexts and violates human rights and that it must become a legitimate topic of study within disability studies and other health-related fields. A rights perspective would demand, for true inclusion, a complete re-visioning of environmental policies, products, and the built environment regardless of economic pressures. As Finkelstein (2005) has said, “The historical destiny now fall on disabled people, in alliance with others who have also been marginalized by people with capabilities, to return humanity to its mission in developing a truly supportive society” (p. 20).



## References

- Abberley, P. (1987). The concept of oppression and the development of a social theory of disability. *Disability, Handicap & Society*, 2(1), 5-19.
- Ashford, N.A., & Miller, C.S. (1998). *Chemical exposures: Low levels and high stakes*. Second Edition. New York: Van Nostrand Reinhold.
- Barnes, C., Mercer, G., & Shakespeare, T. (2005). *Exploring disability: A sociological introduction*. Maldon, MA: Polity Press.
- Begum, N. (1996). General practitioners' role in shaping disabled women's lives. In C. Barnes & G. Mercer (Eds.). *Exploring the divide*, (pp. 157-172). Leeds: The Disability Press.
- Boscol, P., Di Sciascio, M.B., D'Ostilio, S, Del Signore, A., Reale, M., Conti, P., Bavazzano, P., Paganelli, R., & Di Gioacchino, M. (2001). Effects of electromagnetic fields produced by radiotelevision broadcasting stations on the immune system of women. *Science of the Total Environment* 273(1-3), 1-10.
- Caress, S., & Steinemann, A. (2003). A review of a two-phase population study of multiple chemical sensitivities. *Environmental Health Perspectives*, 111, 1490-1497.
- Castleman, B.I., & Ziem, G.E. (1988). Corporate influence on threshold limit values. *American Journal of Industrial Medicine*, 13, 531-559.
- Chiang, H., Yao, G.D., Fang, Q.S., Wang, K.Q., Lu, D.Z., & Zhou, Y.K. (1989). Health effects of environmental electromagnetic fields. *Journal of Bioelectricity* 8, 127-131.
- Colborn, T., Dumanoski, D., & Myers, J.P. (1997). *Our stolen future: Are we threatening our fertility, intelligence, and survival? A scientific detective story*. NY: Penguin.
- Denison, R. (2007). Not that innocent: A comparative analysis of Canadian, European Union, and United states policies on industrial chemicals. Washington, DC USA: Environmental Defense.
- Dick, R. B. (1988). Short duration exposures to organic solvents: The relationship between neurobehavioral test results and other indicators. *Neurotoxicology and Teratology*, 10(1), 39-50.
- Doiron, N. (2007). People with environmental sensitivities: Life, identity, and services. Doctoral Thesis in Social Work, University of Toronto.

- Engel, L.R., Gibson, P.R., Adler, M.E., & Rice, V.M. (1996, March). Unmet medical needs in persons with self-reported multiple chemical sensitivity. Poster delivered at the Annual Meeting of the Southeastern Psychological Association, Norfolk, Virginia, March 20-23.
- Evans, N. (2006). State of the evidence: What is the connection between the environment and breast cancer? San Francisco, CA: Breast Cancer Fund and Breast Cancer Action.
- Finkelstein, V. (2005). Representing disability. In J. Swain, M. French, C. Barnes & C. Thomas (Eds.). *Disabling barriers, enabling environments*, 2<sup>nd</sup> Edition (pp. 13-20). Sage Publications.
- Firstenberg, A. (2004a, June). Killing fields. *The Ecologist*, 22-27.
- Firstenberg, A. (2004b). Cellular phone task force report. Thursday July 22, 2004. Downloaded on 7/12/07 from <http://www.cprnews.com/worldnews.cfm?id=175>
- Gibson, P. R. (2006). *Multiple chemical sensitivity: A survival guide*, Second Edition. Churchville, VA: Earthrise Books.
- Gibson, P.R. (1997). Multiple chemical sensitivity, culture and delegitimization: A feminist analysis. *Feminism & Psychology*, 7(4), 475-493.
- Gibson, P.R., Cheavens, J., & Warren, M. L. (1996). Multiple chemical sensitivity/environmental illness and life disruption. *Women & Therapy*, 19, 63-79
- Gibson, P.R., Cheavens, J., & Warren, M. L. (1998). Social support in persons with self-reported sensitivity to chemicals. *Research in Nursing & Health*, 21(2), 103-115.
- Gibson, P. R., Elms, A.N.M., & Ruding, L.A. (2003). Perceived treatment efficacy for conventional and alternative therapies reported by persons with multiple chemical sensitivity. *Environmental Health Perspectives*, 111, 1498-1504.
- Gibson, P.R. & Lindberg, A. (2007). Work accommodation for people with multiple chemical sensitivity. *Disability & Society*, 22(7), 717-732.
- Gibson, P.R., Placek, E., Lane, J., Brohimer, S.O., & Lovelace, A.C.E. (2005). Disability induced identity changes in persons with multiple chemical sensitivity. *Qualitative Health Research*, 15(4), 502-524.

- Gibson, P.R., White, M. A., & Rice, V.M. (1997, March). Life satisfaction in persons with invisible disabilities: Chemical sensitivity/chemical injury. Poster delivered at the 21st National Conference, Association for Women in Psychology, March 6-9, Pittsburgh, PA.
- Gulf war syndrome: Aftermath of a toxic battlefield. (2000). Directed by Alison Johnson and Richard Startzman. Brunswick, ME: Johnson/Startzman Films.
- Hallberg, O., & Johansson O, (2004). Malignant melanoma of the skin - not a sunshine story! *Medical Science Monitor*, 10: CR336-340.
- Hughes, B. (2002). Disability and the body. In C. Barnes, M. Oliver, & L. Barton (Eds.). *Disability studies today*, (pp. 58-76), Cambridge, UK: Polity Press.
- Hutado, S. (1999). *Drumbeat for mother earth: Persistent organic pollutants threatening indigenous peoples*. Greenpeace: Indigenous Environmental Network.
- Johnson, A. (2000). *Casualties of progress: Personal histories from the chemically sensitive*. Brunswick, ME: MCS Information Exchange.
- Johnson, A., & Starzman, R. (2006). *The toxic clouds of 9/11: A looming health disaster* [Motion picture]. Johnson/Startzman Films. Alison Johnson/Richard Startzman, P.O Box 213, Brunswick, Maine 04011.
- Johnson, A., & Starzman, R. (2000). *Gulf war syndrome: Aftermath of a toxic battlefield* [Motion picture]. Johnson/Startzman Films. Alison Johnson/Richard Startzman, P.O Box 213, Brunswick, Maine 04011.
- Johnson, A., & Starzman, R. (1998). *Multiple chemical sensitivity: How chemical exposures may be affecting your health* [Motion picture]. Johnson/Startzman Films. Alison Johnson/Richard Startzman, P.O Box 213, Brunswick, Maine 04011.
- Kaschak, E. (1992). *Engendered lives: A new psychology of women's experience*. New York: Basic Books.
- Kolodynski, A.A., & Kolodynska, V.V. (1996). Motor and psychological functions of school children living in the area of the Skrunda Radio Location Station in Latvia. *Science of the Total Environment*, 180(1), 87-93.

- Lax, M. B. (1998). Multiple chemical sensitivities: The social construction of an illness. *International Journal of Health Services*, 28, 725-745.
- Lee, P. (2002). Shooting for the moon. In C. Barnes, M. Oliver, & L. Barton (Eds.). *Disability studies today* (pp. 139-161). Malden, MA: Blackwell.
- Levallois, P., Neutra, R., Lee, G., & Hristova, L. (2002). Study of self-reported hypersensitivity to electromagnetic fields in California. *Environmental Health Perspectives*, 110(supplement 4), 619-623.
- Lipson, J.G. (2000). She's not disabled – She plays tennis. *Disability Studies Quarterly*, 20(3), 281-286.
- Marks, D. (1999). *Disability: Controversial debates and psychosocial perspectives*. NY: Routledge.
- McCormick, G. (2001). *Living with multiple chemical sensitivity; Narratives of coping*. Jefferson, NC: McFarland.
- Meggs, W.J., Dunn, K.A., Bloch, R.M., Goodman, P.E., & Davidoff, A.L. (1996). Prevalence and nature of allergy and chemical sensitivity in a general population. *Archives of Environmental Health*, 51(4), 275-282.
- Miller, C. S. (1996). Chemical sensitivity: Symptom, syndrome, or mechanism for disease? *Toxicology*, 111, 69-86.
- Miller, C. S. (1999). Are we on the threshold of a new theory of disease? Toxicant-induced loss of tolerance and its relationship to addiction and abidction. *Toxicology and Industrial Health*, 15(3/4), 284-294.
- Mitchell, D. & Snyder, S. (2006). Narrative prosthesis and the materiality of metaphor. In L. Davis (Ed.). *The disability studies reader*, (pp 205-216). NY: Routledge.
- Multiple chemical sensitivity: How chemical exposures may be affecting your health. (1998). Directed by Alison Johnson and Richard Starzman. Brunswick, ME: Johnson/Starzman Films.
- National Institute of Building Sciences (NIBS). 2005. IEQ indoor environmental quality. Washington, DC: NIBS.
- Neutra, R., Kreutzer, R., & Lashuay, N. (1999). Prevalence of people reporting sensitivities to chemicals in a population-based survey. *American Journal of Epidemiology* 150, 1-11.

- National Institute of Building Sciences (NIBS). (2005). *IEQ indoor environmental quality*. With funding support from the Architectural and Transportation Barriers Compliance Board (Access Board). Washington, DC: National Institute of Building Sciences.
- Oliver, M. (1990). *The politics of disablement*. NY: St. Martin's Press.
- Randolph, T.G., & Moss, R.W. (1982). *An alternative approach to allergies*. New York, NY: Harper & Row.
- Richardson, D.B., Wing, S., Schroeder, J., Schmitz-Feuerhake, I. & Hoffmann, W. (2005). Ionizing radiation and chronic lymphocytic leukemia. *Environmental Health Perspectives*, 113(1), 1-5.
- Saito, M., Kumano, H., Yoshiuchi, K., Kokubo, N., Ohashi, K., Yamamoto, Y., Shinohara, N., Yanagisawa, Y., Sakabe, K., Miyata, M., Ishikawa, S., & Kuboki, T. (2005). Symptom profile of multiple chemical sensitivity in actual life. *Psychosomatic Medicine*, 67, 318-325.
- Sears, M.E. (2007). The medical perspective on environmental sensitivities. Ottawa, Ontario, Canada: Canadian Human Rights Commission.
- Shakespeare, T. & Watson, N. (2002). The social model of disability: an outdated ideology? *Research in Social Science and Disability*, 2, 9-28.
- Siebers, T. (2006). Disability in theory: From social constructionism to the new realism of the body. In L. Davis (Ed.). *The disability studies reader*, (pp 163-183). NY: Routledge.
- Simmons, W. Chemical Cowboys - A Story of Guillain Barre Syndrome. Retrieved on April 17, 2008 from [http://www.mcs-global.org/Stories/Bills\\_Story.htm](http://www.mcs-global.org/Stories/Bills_Story.htm).
- Thomas, C. (2004). Developing the social relational model of disability: A theoretical agenda. In C. Barnes & G. Mercer (Eds.). *Exploring the divide* (pp.32- 47). Leeds: The Disability Press.
- Thomas, C. (2002). Disability theory: Key ideas, issues, and thinkers. In C. Barnes, M. Oliver, & L. Barton (Eds.), (pp. 38-57). *Disability studies today*. Boston, MA: Polity Press.
- Transande, L., Landrigan, P.J., & Schechter, C. (2005). Public health and economic consequences of methyl mercury toxicity to the developing brain. *Environmental Health Perspectives*, 113(5), 590-596.
- Voorhees, R. (1999). Results of analysis of multiple chemical sensitivities questions, 1997. Behavioral Risk Factor Surveillance system. Santa Fe, NM: New Mexico Department of Health, Feb. 8.

Wendell, S. (2006). Toward a feminist theory of disability. In L. Davis (Ed.). *The disability studies reader*, (pp. 243-256). NY: Routledge.

Zwillinger, R. (1997). *The Dispossessed: Living With Multiple Chemical Sensitivities*. Paulden, AZ: The Dispossessed Project.