**Chronic Environmental Contamination: A Systematic Review of Psychosocial Health Consequences**

**Supplemental Materials**

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**Appendix A**

**Administrative Information**

PRISMA-P Item No. 1: **Identification**

* Protocol of Systematic Review: “Chronic Environmental Contamination: Psychosocial Health Consequences, Risk Factors, and Pathways to Community Resilience”

PRISMA-P Item No. 2: **Registration**

* Protocol not registered at this time.

PRISMA-P Item No. 3: **Authors**

**[REMOVED FOR BLIND REVIEWS]**

PRISMA-P Item No. 4: **Amendments**

* Not applicable at this time.

PRISMA-P Item No. 5: **Support**

* Funding for the project is being provided by the Agency for Toxic Substances and Disease Registry, through contract with Guidehouse and subawards to the Gretchen Swanson Center for Nutrition and the University of Arizona. ATSDR staff are directly involved in the planning and execution of the literature review.

**Introduction**

PRISMA-P Item No. 6: **Rationale**

* A preliminary narrative review of the psychological and social scientific literatures on chronic environmental contamination and psychosocial health[[1]](#footnote-1) yields several reasonable conclusions as well as open questions.
  + *Prior conclusions:* The experience of chronic environmental contamination is stressful, with qualities that differentiate it from the experience of natural disaster (particularly with respect to timecourse and social processes). This experience has been conceptually and empirically linked to posttraumatic stress symptoms, although not consistently to PTSD diagnosis. Members of disadvantaged social groups (e.g., racial/ethnic minorities; individuals lower in socioeconomic status) are disproportionately vulnerable to the negative psychosocial health impact of chronic environmental contamination. Absence of perceived and objective control at both individual and community levels is a risk factor for negative psychosocial health consequences in the presence of chronic environmental contamination.
  + *Open questions:*What are the unique psychosocial characteristics of chronic environmental contamination experience (e.g., life near a Superfund site) as contrasted with the psychosocial profile of natural disasters, rapid-onset technological disasters (e.g., oil spills, major chemical accidents), and background pollution exposure? What is the average degree of psychological health impact caused by chronic environmental contamination? How does stress interact with toxicant exposure or prior risk factors (e.g., allostatic load; socioeconomic status; race/ethnicity) to influence health outcomes in communities undergoing chronic environmental contamination? Why are some communities more resilient than others to the psychosocial health effects?
* Given the need to understand the *unique* psychosocial profile of chronic contamination experience, as well as the average severity of psychological health impact, the systematic review will be targeted as much as possible to focus on identifiable communities experiencing long-term contamination impact or exposure. Prototypic examples would include neighborhoods on Superfund sites, near hazardous waste sites, or with a history of contamination from industrial activity. Technological disasters that result in significant community exposure to contaminants are also appropriate for our research aims. However, studies of the effects of background (air) pollution or occupational/developmental exposures that do not focus on an identifiable community’s experience are inappropriate, given such studies do not address the psychosocial impact of chronic contamination when recognized as a community-level hazard. Further, research on major catastrophic events (the September 11 terrorist attacks, the Fukushima disaster, and the Deepwater Horizon oil spill) will be excluded from the systematic review, given such events had highly unique aspects that might influence psychological outcomes to a degree that would be atypical for most community chronic contamination experiences.
* Given that a systematic literature review has (to our knowledge) never been conducted in this domain, the present review is designed to (1) investigate the robustness of these prior conclusions in research performed during the period 1995-2019; and (2) begin to address the open questions remaining from the prior literature.

PRISMA-P Item No. 7: **Objectives**

1. *Develop a typology, utilizing continuous psychological and social dimensions, for identifying the unique features of chronic environmental contamination (chemical, radiological) in comparison to other categories of environmental disaster (including natural disasters, technological disasters, and background pollution).*
2. *Research Question: What is the effect of experiencing chronic environmental contamination on stress/psychological health?*

- When relevant full-text articles are compiled, all **quantitative studies** using any method (e.g., case-control) with an operationalization of **experienced contamination** and of **stress/psychosocial health** will be drawn upon to answer this question.

1. *RQ: Could increased stress/allostatic load related to environmental contamination incidents lead to physical health risks among communities or sub-populations, independently and/or through interactions with chemical exposures?*

- All **quantitative studies** using any method (e.g., case-control) with an operationalization of **experienced contamination,** **stress/psychological health,** and **physiological health** will be drawn upon to answer this question.

1. *RQ: Why are some communities or sub-populations within communities more vulnerable to or resilient than others to the psychosocial health effects of chronic environmental contamination?*
2. *RQ: What practical interventions can be implemented by public health professionals to help communities affected by environmental contamination address psychosocial health concerns?*

- When relevant full-text articles are compiled, they will be divided into subgroups of **quantitative** and **qualitative studies**. The qualitative studies will be supplemented by **grey literature**, and both bodies of literature will be drawn upon for answers to these questions.

**Methods**

PRISMA-P Item No. 8: **Eligibility criteria**

* Must report research (quantitative/qualitative) with individuals who have experienced chronic environmental contamination (residing in countries with 2018 HDI > .90).
  + Theoretical papers, commentaries, and literature reviews may be utilized for the narrative/discussion portions of the review, but will be excluded from the systematic review.
  + Studies concerning environmental disasters that do not primarily qualify as chronic environmental contamination (e.g., oil spills, background pollution) may be utilized for the narrative/discussion portions, but will be excluded from the systematic review.
  + Studies concerning natural disasters (e.g., earthquakes, floods) will be excluded from the systematic review, unless they focus on consequences for environmental contamination and meet other criteria.
* Research will be limited to the period 1995-2019, in order to update a major synthesis of this literature conducted in 1995 by an ATSDR-convened expert panel (see Tucker, 1995).
* In addition to operationalization/measurement of chronic environmental contamination, studies must also operationalize/measure psychological stress/health (using subjective/self-report or objective/physiological measures).
* Any research method will be eligible (e.g., case study, interviews, longitudinal/pre-post, correlational, case-control) if the sample and variable criteria are met.

PRISMA-P Item No. 9: **Information sources**

* Databases to be searched are PsycINFO, PubMed, EMBASE, Scopus, and Web of Science. These databases were determined based on thorough discussion among the members of the interdisciplinary co-author team (which includes representatives from psychology, psychiatry, public health/environmental science, and nutrition science), as well as by scanning similar reviews. Additional databases were considered but ultimately excluded either because their coverage was redundant with those already selected, or because initial searches suggested they did not yield information with relevant psychological variables (e.g., Toxline). The team is confident that this is the most comprehensive search of the literature in this area that has yet been conducted and reported.
* Reference lists of eligible articles will be scanned for additional articles.
* Grey literature will be manually searched based on available resources and databases.

PRISMA-P Item No. 10: **Search strategy**

* Inclusion
  + - Any study design, quantitative or qualitative
    - Must include an operationalization/measurement of exposure
    - Must include an operationalization/measurement of stress/psychosocial health
    - Must have examined chronic environmental contamination in a specified community context
    - Must include human subjects/participants
    - Can include any age or sex
    - Must have been conducted in a country with 2018 HDI ≥ 0.90
    - Norway, Switzerland, Australia, Ireland, Germany, Iceland, Hong Kong, Sweden, Singapore, Netherlands, Denmark, Canada, United States, United Kingdom, Finland, New Zealand, Belgium, Liechtenstein, Japan, Austria, Luxembourg, Israel, South Korea, France
    - Research conducted between 1995-2019
* Excluded, but flagged
  + - Theoretical papers, commentaries, and literature reviews
    - Studies concerning environmental disasters that do not primarily qualify as chronic environmental contamination (e.g., oil spills, background pollution) and meet the other criteria
    - “Catastrophic” events – specifically the September 11 terrorist attacks, the Fukushima disaster, and the Deepwater Horizon oil spill – will be excluded
    - Studies concerning natural disasters (e.g., earthquakes, floods) if they have a focus on psychosocial consequences for environmental contamination and meet the other criteria
    - Studies of occupational or developmental exposures that are not focused on the experience of a particular community undergoing chronic contamination
* Primary search terms to be used in combination:
  + Contamination (chronic contamination / contaminated community / environmental contamination / hazardous exposure / hazardous substances / hazardous waste / hazardous waste sites / soil contamination / technological disaster / toxic contamination / toxic exposure / water contamination / radiological contamination)
  + Stress (acute stress disorders / anxiety / behavioral health / distress / emotional stress / life satisfaction / life stress / mental fatigue / mental health / psychological stress / psychosocial health / psychosocial stress / PTSD / posttraumatic stress / post-traumatic stress / stress, psychologic / stress disorders, traumatic / stress disorder, post traumatic / subjective well-being / depression / demoralization / substance abuse / domestic violence)
* Search Queries in **Appendix B** (this document)
* **Grey literature** is primarily being used to achieve Objective #5 for the systematic review, namely, addressing the following research question: *What practical interventions can be implemented by public health professionals to help communities affected by environmental contamination address psychosocial health concerns?* (see PRISMA-P Item No. 7).
* Manual search methods will be used to find relevant materials to address this objective. If papers reporting empirical, quantitative research matching the inclusion criteria for the systematic review are found, they will be added to the body of included relevant quantitative literature. If papers are of a different nature (e.g., reports, commentaries, fact sheets, conference summaries, qualitative studies), they will be handled separately and primarily utilized for narrative sections of the review.
* The following search databases will be utilized to find relevant grey literature, using combinations of the “contamination” and “stress” search terms identified in the PRISMA-P checklist:
  + Deep Blue (via University of Michigan) <https://deepblue.lib.umich.edu/documents>
  + WorldCat <https://oaister.worldcat.org/>
  + WorldWideScience (via Office of Scientific and Technical Information) <https://worldwidescience.org/>
* The following government agency websites will also be utilized:
  + ATSDR <https://www.atsdr.cdc.gov/>
  + CDC [www.cdc.gov](http://www.cdc.gov)
  + SAMHSA <https://www.samhsa.gov/>
* The first author will use the terms “contamination” and “stress” to search through each of these grey literature sources, and retain all materials that appear relevant to Objective #5 (PRISMA-P Item No. 7). These materials will be combined with other prior relevant materials collected by the authors of the paper. Collectively, the grey literature will be used to inform the Discussion section of the literature review, rather than being included in the systematic review Results (which will focus on the published quantitative empirical literature).
* Dissertations and theses will be searched using the PROQUEST database and the key terms “contamination,” “psychological stress,”, and “Superfund” (based on the high volume of related dissertations and theses). Relevant dissertations will be selected and retained by the first author and one of the co-authors. These will be read and annotated by one of the co-authors, to be used to inform the Discussion section of the literature review, rather than being included in the systematic review Results (which will focus on the published quantitative empirical literature).

PRISMA-P Item No. 11: **Study records**

* Distiller SR software and Dropbox file folders will be used to manage references, records, and data.
* Two independent reviewers (from the Gretchen Swanson Center and the University of Arizona) will review articles screened to the full-text stage for appropriateness for inclusion, and oversee relevant data extraction.

* Relevant data will be extracted using forms devised in Distiller SR.

PRISMA-P Item No. 12: **Data items**

* *Study information.* Authors, year, journal; qualitative versus quantitative; study design; study duration; sample size.
* *Demographic information.* For all samples, where provided: age, gender, race/ethnicity, socioeconomic status.
* *Contamination event information*. For all samples, where provided: location (town/city state), date/timecourse of event, type of event (e.g., source and severity of contamination, type of contaminant), the extent of human exposure (including, if relevant, route to human contact), documentation of increased health risks or other effects due to contamination.
* *Effects of contamination on stress/psychological health.* For all quantitative studies, data concerning the effect of contamination on stress/psychological health will be extracted, including operationalizations/measurements employed.
* *Effects of contamination and stress on physiological health.* For all quantitative studies that include measures of physiological health, data concerning the effects of exposure and stress on physiological health will be extracted, including operationalizations/measurements employed.

PRISMA-P Item No. 13: **Outcomes and prioritization**

* As stated in Item 7, quantitative studies eligible for the systematic review will be examined to derive preliminary answers regarding:
  + The extent and nature of the impact of chronic environmental contamination on **psychological stress/health**
  + The extent to which increased stress/allostatic load related to environmental contamination incidents leads to **physiological health risks** among communities or sub-populations, independently and/or through interactions with chemical exposures
* Eligible quantitative and qualitative studies, as well as grey literature, will be examined to identify:
  + **Risk and resilience factors** (e.g., presence of individual and community stressors) moderating the impact of chronic environmental contamination on psychosocial stress/health
  + Potential **models/pathways for intervention** to address psychosocial health concerns at the community level

PRISMA-P Item No. 14: **Risk of bias in individual studies**

* The Risk of Bias Assessment Tool for Nonrandomized Studies (Kim et al., 2013) will be utilized by reviewers to assess the quality of eligible quantitative studies. The tool is available here: <http://dx.doi.org/10.1016/j.jclinepi.2012.09.016> (with journal access, readers can find the tool in the “Appendix” of this article, provided as an online supplemental material)

PRISMA-P Item No. 15: **Data synthesis**

* All eligible quantitative studies will be utilized to estimate the weighted effect size of chronic environmental contamination experience on stress/trauma symptoms. Basic meta-analytic techniques will be used (Goh, Hall, & Rosenthal, 2016; Viechtbauer, 2010). However, extreme caution will be used in presenting and interpreting this effect size. Given the anticipated preliminary status of the relevant quantitative literature, and the likely heterogeneity of samples, events, designs, and measures, this effect size will provide at best a rough and preliminary estimate. Exploratory comparisons will be made to benchmarks from more established literatures concerning the stress and trauma impacts of other stressors (e.g., natural disasters).
* For other outcomes (direct or interactive effects of stress and exposure on physiological health; risk and resilience factors; intervention pathways), narrative and verbal/visual syntheses will be prepared (e.g., summary tables).

PRISMA-P Item No. 16: **Meta-bias(es)**

* Given the anticipated preliminary status of the relevant quantitative literature, no systematic assessment of meta-biases is planned.

PRISMA-P Item No. 17: **Confidence in cumulative evidence**

* Given the anticipated preliminary status of the relevant quantitative literature, no systematic assessment of confidence is planned. Appropriate caution will be advised in interpreting the conclusions of the review. The review is intended as a starting point for future psychosocial research and intervention development.

**Appendix B**

**PsycINFO (Returns 280 results, 6-2-2019) [RefID: 2216-2495]**

(TX “contamination” OR TX “contaminant\*” OR TX “chronic contamination” OR TX “contaminated communit\*” OR TX “contaminated” OR TX “environmental contamination” OR TX “hazardous exposure” OR TX “hazardous substance\*” OR TX “hazardous waste” OR TX “hazardous waste site\*” OR TX “soil contamination” OR TX “technological disaster\*” OR TX “toxic contamination” OR TX “toxic exposure” OR TX “water contamination” OR TX “radiological contamination”) AND (TX “stress” OR TX “acute stress disorder\*” OR TX “anxiety” OR TX “behavioral health” OR TX “distress” OR TX “emotional stress” OR TX “life satisfaction” OR TX “life stress” OR TX “mental fatigue” OR TX “mental health” OR TX “psychological stress” OR TX “psychosocial health” OR TX “psychosocial stress” OR TX “PTSD” OR TX “posttraumatic stress” OR TX “post-traumatic stress” OR TX “psychologic stress” OR TX “stress disorder\*” OR TX “traumatic” OR TX “subjective well-being” OR TX “depression” OR TX “demoralization” OR TX “substance abuse” OR TX “domestic violence”) AND (PL “Norway” OR PL “Switzerland” OR PL “Australia” OR PL “Ireland” OR PL “Germany” OR PL “Iceland” OR PL “Hong Kong” OR PL “Sweden” OR PL “Singapore” OR PL “Netherlands” OR PL “Denmark” OR PL “Canada” OR PL “United States” OR PL “U.S.” OR PL “America” OR PL “United Kingdom” OR PL “Finland” OR PL “New Zealand” OR PL “Belgium” OR PL “Liechtenstein” OR PL “Japan” OR PL “Austria” OR PL “Luxembourg” OR PL “Israel” OR PL “South Korea” OR PL “Korea” OR PL “Republic of Korea” OR PL “France”) AND (PY 1995-2019)

**Embase (Returns 1,911 results, 6-2-2019) [Ref ID: 305-2215]**

**\*Paste into “Quick Search” bar**

[1995-2019]/py AND ('contamination':ti,ab OR 'contaminant\*':ti,ab OR 'chronic contamination':ti,ab OR 'contaminated communit\*':ti,ab OR 'contaminated':ti,ab OR 'environmental contamination':ti,ab OR 'hazardous exposure':ti,ab OR 'hazardous substance\*':ti,ab OR 'hazardous waste':ti,ab OR 'hazardous waste site\*':ti,ab OR 'soil contamination':ti,ab OR 'technological disaster\*':ti,ab OR 'toxic contamination':ti,ab OR 'toxic exposure':ti,ab OR 'water contamination':ti,ab OR ‘radiological contamination’:ti,ab) AND ('stress':ti,ab OR 'acute stress disorder\*':ti,ab OR 'anxiety':ti,ab OR 'behavioral health':ti,ab OR 'distress':ti,ab OR 'emotional stress':ti,ab OR 'life satisfaction':ti,ab OR 'life stress':ti,ab OR 'mental fatigue':ti,ab OR 'mental health':ti,ab OR 'psychological stress':ti,ab OR 'psychosocial health':ti,ab OR 'psychosocial stress':ti,ab OR 'ptsd':ti,ab OR 'posttraumatic stress':ti,ab OR 'post-traumatic stress':ti,ab OR 'psychologic stress':ti,ab OR 'stress disorder\*':ti,ab OR 'traumatic':ti,ab OR 'subjective well-being':ti,ab OR ‘depression':ti,ab OR ‘demoralization':ti,ab OR ‘substance abuse':ti,ab OR ‘domestic violence':ti,ab) AND ('norway':ca OR 'switzerland':ca OR 'australia':ca OR 'ireland':ca OR 'germany':ca OR 'iceland':ca OR 'hong kong':ca OR 'sweden':ca OR 'singapore':ca OR 'netherlands':ca OR 'denmark':ca OR 'canada':ca OR 'united states':ca OR 'u.s.':ca OR 'america':ca OR 'united kingdom':ca OR 'finland':ca OR 'new zealand':ca OR 'belgium':ca OR 'liechtenstein':ca OR 'japan':ca OR 'austria':ca OR 'luxembourg':ca OR 'israel':ca OR 'south korea':ca OR 'korea':ca OR 'republic of korea':ca OR 'france':ca) AND ('human'/de)

**PubMed (Returns 304 results, 6-2-2019) [RefID: 1-304]**

("1995"[CRDAT] : "2019"[CRDAT]) AND ("contamination"[title/abstract] OR "contaminants"[title/abstract] OR "chronic contamination"[title/abstract] OR "contaminated community"[title/abstract] OR "contaminated communities"[title/abstract] OR "contaminated"[title/abstract] OR "environmental contamination"[title/abstract] OR "hazardous exposure"[title/abstract] OR "hazardous substance"[title/abstract] OR "hazardous substances"[title/abstract] OR "hazardous waste"[title/abstract] OR "hazardous waste site"[title/abstract] OR "hazardous waste sites"[title/abstract] OR "soil contamination"[title/abstract] OR "technological disaster"[title/abstract] OR "technological disasters"[title/abstract] OR "toxic contamination"[title/abstract] OR "toxic exposure"[title/abstract] OR "water contamination"[title/abstract] OR “radiological contamination”[title/abstract]) AND ("stress"[title/abstract] OR "acute stress disorder"[title/abstract] OR "acute stress disorders"[title/abstract] OR "anxiety"[title/abstract] OR "behavioral health"[title/abstract] OR "distress"[title/abstract] OR "emotional stress"[title/abstract] OR "life satisfaction"[title/abstract] OR "life stress"[title/abstract] OR "mental fatigue"[title/abstract] OR "mental health"[title/abstract] OR "psychological stress"[title/abstract] OR "psychosocial health"[title/abstract] OR "psychosocial stress"[title/abstract] OR "ptsd"[title/abstract] OR "posttraumatic stress"[title/abstract] OR "post-traumatic stress"[title/abstract] OR "psychologic stress"[title/abstract] OR "stress disorder"[title/abstract] OR "stress disorders"[title/abstract] OR "traumatic"[title/abstract] OR "subjective well-being"[title/abstract] OR “depression"[title/abstract] OR “demoralization"[title/abstract] OR “substance abuse"[title/abstract] OR “domestic violence"[title/abstract]) AND ("norway"[MeSH Terms] OR "switzerland"[MeSH Terms] OR "australia"[MeSH Terms] OR "ireland"[MeSH Terms] OR "germany"[MeSH Terms] OR "iceland"[MeSH Terms] OR "hong kong"[MeSH Terms] OR "sweden"[MeSH Terms] OR "singapore"[MeSH Terms] OR "netherlands"[MeSH Terms] OR "denmark"[MeSH Terms] OR "canada"[MeSH Terms] OR "united states"[MeSH Terms] OR "united kingdom"[MeSH Terms] OR "finland"[MeSH Terms] OR "new zealand"[MeSH Terms] OR "belgium"[MeSH Terms] OR "liechtenstein"[MeSH Terms] OR "japan"[MeSH Terms] OR "austria"[MeSH Terms] OR "luxembourg"[MeSH Terms] OR "israel"[MeSH Terms] OR "korea"[MeSH Terms] OR "republic of korea"[MeSH Terms] OR "france"[MeSH Terms]) AND ("humans"[MeSH Terms])

**Scopus (Returns 1,380 results, 6-2-2019) [RefID: 2496-3875]**

**\*Have to select “advanced” and then paste search there**

( TITLE-ABS ( "contamination" ) OR TITLE-ABS ( "contaminants" ) OR TITLE-ABS ( "chronic contamination" ) OR TITLE-ABS ( "contaminated community" ) OR TITLE-ABS ( "contaminated communities" ) OR TITLE-ABS ( "contaminated" ) OR TITLE-ABS ( "environmental contamination" ) OR TITLE-ABS ( "hazardous exposure" ) OR TITLE-ABS ( "hazardous substance" ) OR TITLE-ABS ( "hazardous substances" ) OR TITLE-ABS ( "hazardous waste" ) OR TITLE-ABS ( "hazardous waste site" ) OR TITLE-ABS ( "hazardous waste sites" ) OR TITLE-ABS ( "soil contamination" ) OR TITLE-ABS ( "technological disaster" ) OR TITLE-ABS ( "technological disasters" ) OR TITLE-ABS ( "toxic contamination" ) OR TITLE-ABS ( "toxic exposure" ) OR TITLE-ABS ( "water contamination" ) OR TITLE-ABS ( “radiological contamination” )) AND ( TITLE-ABS ( "stress" ) OR TITLE-ABS ( "acute stress disorder" ) OR TITLE-ABS ( "acute stress disorders" ) OR TITLE-ABS ( "anxiety" ) OR TITLE-ABS ( "behavioral health" ) OR TITLE-ABS ( "distress" ) OR TITLE-ABS ( "emotional stress" ) OR TITLE-ABS ( "life satisfaction" ) OR TITLE-ABS ( "life stress" ) OR TITLE-ABS ( "mental fatigue" ) OR TITLE-ABS ( "mental health" ) OR TITLE-ABS ( "psychological stress" ) OR TITLE-ABS ( "psychosocial health" ) OR TITLE-ABS ( "psychosocial stress" ) OR TITLE-ABS ( "ptsd" ) OR TITLE-ABS ( "posttraumatic stress" ) OR TITLE-ABS ( "post-traumatic stress" ) OR TITLE-ABS ( "psychologic stress" ) OR TITLE-ABS ( "stress disorder" ) OR TITLE-ABS ( "stress disorders" ) OR TITLE-ABS ( "traumatic" ) OR TITLE-ABS ( "subjective well-being" ) OR TITLE-ABS ( “depression" ) OR TITLE-ABS ( "demoralization" ) OR TITLE-ABS ( "substance abuse" ) OR TITLE-ABS ( "domestic violence” )) AND ( AFFILCOUNTRY ( norway ) OR AFFILCOUNTRY ( switzerland ) OR AFFILCOUNTRY ( australia ) OR AFFILCOUNTRY ( ireland ) OR AFFILCOUNTRY ( germany ) OR AFFILCOUNTRY ( iceland ) OR AFFILCOUNTRY ( hong AND kong ) OR AFFILCOUNTRY ( sweden ) OR AFFILCOUNTRY ( singapore ) OR AFFILCOUNTRY ( netherlands ) OR AFFILCOUNTRY ( denmark ) OR AFFILCOUNTRY ( canada ) OR AFFILCOUNTRY ( united AND states ) OR AFFILCOUNTRY ( united AND kingdom ) OR AFFILCOUNTRY ( finland ) OR AFFILCOUNTRY ( new AND zealand ) OR AFFILCOUNTRY ( belgium ) OR AFFILCOUNTRY ( liechtenstein ) OR AFFILCOUNTRY ( japan ) OR AFFILCOUNTRY ( austria ) OR AFFILCOUNTRY ( luxembourg ) OR AFFILCOUNTRY ( israel ) OR AFFILCOUNTRY ( korea ) OR AFFILCOUNTRY ( republic AND of AND korea ) OR AFFILCOUNTRY ( france ) ) AND ( PUBYEAR > 1994 ) AND ( LIMIT-TO ( DOCTYPE , "ar" ) OR LIMIT-TO ( DOCTYPE , "re" ) ) AND ( LIMIT-TO ( EXACTKEYWORD , "Human" ) OR LIMIT-TO ( EXACTKEYWORD , "Humans" ) OR LIMIT-TO ( EXACTKEYWORD , "Male" ) OR LIMIT-TO ( EXACTKEYWORD , "Female" ) OR LIMIT-TO ( EXACTKEYWORD , "Adult" ) OR LIMIT-TO ( EXACTKEYWORD , "Adolescent" ) OR LIMIT-TO ( EXACTKEYWORD , "Child" ) ) AND ( EXCLUDE ( EXACTKEYWORD , "Animal" ) OR EXCLUDE ( EXACTKEYWORD , "Animal Experiment" ) OR EXCLUDE ( EXACTKEYWORD , "Animal Tissue" ) OR EXCLUDE ( EXACTKEYWORD , "Animalia" ) OR EXCLUDE ( EXACTKEYWORD , "Human Cell" ) OR EXCLUDE ( EXACTKEYWORD , "Animal Cell" ) OR EXCLUDE ( EXACTKEYWORD , "Animal Model" ) OR EXCLUDE ( EXACTKEYWORD , "Mouse" ) OR EXCLUDE ( EXACTKEYWORD , "Rat" ) OR EXCLUDE ( EXACTKEYWORD , "In Vitro Study" ) OR EXCLUDE ( EXACTKEYWORD , "Mice" ) OR EXCLUDE ( EXACTKEYWORD , "Fish" ) OR EXCLUDE ( EXACTKEYWORD , "Rats" ) OR EXCLUDE ( EXACTKEYWORD , "Cell Proliferation" ) )

**Web of Science (Returns 127 results, 6-2-2019) [RefID: 3876-4002]**

**\*Must select “advanced search” to enter query**

(TI=(contamination) OR TI=(contaminants) OR TI=(chronic contamination) OR TI=(contaminated community) OR TI=(contaminated communities) OR TI=(contaminated) OR TI=(environmental contamination) OR TI=(hazardous exposure) OR TI=(hazardous substance) OR TI=(hazardous substances) OR TI=(hazardous waste) OR TI=(hazardous waste site) OR TI=(hazardous waste sites) OR TI=(soil contamination) OR TI=(technological disaster) OR TI=(technological disasters) OR TI=(toxic contamination) OR TI=(toxic exposure) OR TI=(water contamination) OR TI=(radiological contamination)) AND (TI=(stress) OR TI=(acute stress disorder) OR TI=(acute stress disorders) OR TI=(anxiety) OR TI=(behavioral health) OR TI=(distress) OR TI=(emotional stress) OR TI=(life satisfaction) OR TI=(life stress) OR TI=(mental fatigue) OR TI=(mental health) OR TI=(psychological stress) OR TI=(psychosocial health) OR TI=(psychosocial stress) OR TI=(ptsd) OR TI=(posttraumatic stress) OR TI=(post-traumatic stress) OR TI=(psychologic stress) OR TI=(stress disorder) OR TI=(stress disorders) OR TI=(traumatic) OR TI=(subjective well-being) OR TI=(depression) OR TI=(demoralization) OR TI=(substance abuse) OR TI=(domestic violence)) AND (AD=(Norway) OR AD=(Switzerland) OR AD=(Australia) OR AD=(Ireland) OR AD=(Germany) OR AD=(Iceland) OR AD=(Hong Kong) OR AD=(Sweden) OR AD=(Singapore) OR AD=(Netherlands) OR AD=(Denmark) OR AD=(Canada) OR AD=(United States) OR AD=(U.S.) OR AD=(America) OR AD=(United Kingdom) OR AD=(Finland) OR AD=(New Zealand) OR AD=(Belgium) OR AD=(Liechtenstein) OR AD=(Japan) OR AD=(Austria) OR AD=(Luxembourg) OR AD=(Israel) OR AD=(South Korea) OR AD=(Korea) OR AD=(Republic of Korea) OR AD=(France)) AND (PY=(1995-2019))

**TOXNET (TOXLINE:** [**https://toxnet.nlm.nih.gov/newtoxnet/toxline.htm**](https://toxnet.nlm.nih.gov/newtoxnet/toxline.htm)**), (Returns 183 results, 6-2-2019) [Not Used]**

**Appendix C**

**Figure S1.** Funnel plots for aggregated effects of contamination experience on all dependent variables.



1. Based primarily on **Baum, A., & Fleming, I.** (1993). Implications of psychological research on stress and technological accidents. *American Psychologist, 48,* 665-672; **Couch, S. R., & Coles, C. J.** (2011). Community stress, psychosocial hazards, and EPA decision-making in communities impacted by chronic technological disasters. *American Journal of Public Health, 101,* S140-148; **Gee, G. C., & Payne-Sturges, D. C.** (2004). Environmental health disparities: A framework integrating psychosocial and environmental concepts. *Environmental Health Perspectives, 112,* 1645-1653; **Havenaar, J. M., & van den Brink, W.** (1997). Psychological factors affecting health after technological disasters. *Clinical Psychology Review, 17,* 359-374; **Hoover, E., Renauld, M., Edelstein, M. R., & Brown, P.** (2015). Social science collaboration with environmental health. *Environmental Health Perspectives, 123,* 1100-1106; **McEwen, B. S., & Tucker, P.** (2011). Critical biological pathways for chronic psychosocial stress and research opportunities to advance the consideration of stress in chemical risk assessment. *American Journal of Public Health, 101,* S131-139; and **Tucker, P.** (1995). *Report of the expert panel workshop on the psychological responses to hazardous substances*. Atlanta: U.S. Department of Health and Human Services. [↑](#footnote-ref-1)