



National Tribal Toxics Council

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August 30th, 2023

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Dr. Lawrence Martin
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue NW
Washington, DC 20460.

RE: Cumulative Risk Assessment Guidelines for Planning and Problem Formulation; EPA-HQ-ORD-2013-0292-0168.

The National Tribal Toxics Council (NTTC) is an EPA Tribal Partnership Group (TPG) with the Office of Pollution Prevention and Toxics (OPPT) whose vision is a world where tribal people are safely practicing their lifeways. Thus, a primary goal of NTTC has been to improve the characterization of Tribal chemical risk so that our people and the ecosystem resources that they rely upon can be better protected through the chemical risk management process under TSCA. We are thus appreciative of this comment opportunity, and begin from a place of intentional storytelling to relay the importance of using cumulative risk in representing Tribes, and the resultant importance of this document.

The 2022 life expectancy of American Indian/Alaska Native (AI/AN) men is 61.5 years compared with 73.7 years for their non-Hispanic White counterparts¹ and is the lowest for all races and ethnicities². For Tribal women, the difference is slightly smaller, although still substantial, at **69.2** versus **79.2**. Chemical exposures can contribute to the precipitation, onset, severity, progression, and/or mortality of many diseases contributing to this unacceptable statistic. Indeed, a recent Lancet article found that chemical pollution is causing more than 9 million deaths per year globally, a number which is growing geometrically and considered undercounted because of chemical data sparsity². While the life expectancy gulf for tribal men is only partially attributable to chemicals, managing chemicals that pose unreasonable risk axiomatically will decrease that gulf. And to do so requires a reasonable representation of tribal risk.

¹ <https://www.cdc.gov/nchs/data/vsrr/vsrr023.pdf>

² Ibid

We have described in previous TSCA comments and in conversations with OPPT that Tribal risk is not the same as the risk to the general population. Our cultures evolved to thrive in specific local environments and continue to do so today. Like the grasses woven into a basket by an Elder, our lifeways are intimately integrated with the local environments in thousands of complex ways. So too are the myriad non-chemical stressors of our population, many of which emanate from historical inequities and intergenerational trauma from loss of land, language, children and more. The 12.2-year lesser lifespan of AI/AN men deprives their tribes of Elders needed to teach their histories and practices, their communities of experienced hunters to obtain their foods, and their families of their Apas' needed for their humor, love, and wisdom. The very impact of the staggering burden of early death is associated with additional population stress³, contributing to greater susceptibility and poor disease outcome.

So to capture the complex weave of tribal lifeway exposures and stressors, and accurately describe our risk, the use of CRA is foundational. As an Agencywide set of Guidelines, we are encouraged by the draft document. It will serve to inform not only better TSCA risk assessment planning and problem formulation, but the planning components for all other risk assessment work throughout the agency that impacts tribes and that, hence, bears a potential to bring to Tribes a portion of our lost life years.

NTTC believes the Guidelines will be a noteworthy step towards achieving the goal of protecting tribes from chemical risk. Comments below are organized according to the sequence in which the topic or phrase first appears in the document. Overall comments are provided first.

Overall Comments

1. The draft effort is well-deserving of praise for several overall reasons including the following. Discussion on these points follow in the next section.

- ◇ Inclusion of Psychosocial stressor considerations
- ◇ Importance of population feedback to delineate the problem
- ◇ Inclusion of Social Determinants of Health
- ◇ Validity of receptor versus source modeling for conditions often present with tribal risk.

³ In Alaska Native villages and across communities of color, the enduring silence of grief Akilah Johnson, The Washington Post, Nov 4, 2021, <https://www.adn.com/alaska-news/rural-alaska/2021/11/04/in-alaska-native-villages-and-across-communities-of-color-the-enduring-silence-of-grief/>

2. The Document can be improved through the use of explicit Tribal examples, as well as the correction of several miscellaneous references or omissions concerning Tribes. As written, Tribes are invisible. The broad principles of the Guidelines can be applied to Tribes for the most part (exceptions listed in these comments). But tribes are generally underrepresented in the science field and their communities are remote and isolated. It is likely that the bulk of EPA risk assessment staff will not be familiar with Tribes, their lifeways, and an Indigenous worldview. Without direct notation of the need to consider Tribes, Tribes will be left out in the problem formulation. We provide several suggestions as to how to make Tribes visible in the Guidelines.
3. The best available science includes Traditional Ecological Knowledge (TEK), and EPA is required to incorporate TEK per the “Guidance for Federal Departments and Agencies on Indigenous Knowledge”⁴. Tribes are, and must be considered, Subject Matter Experts of their own lifeways and their environment for which they have amassed minutely detailed observations through hundreds⁵ to thousands of years. and their science accorded equal weight as “best available science”.
4. Tribal social determinants of health are different and thus their non-chemical stressors and exposure modifiers are different.
5. Human and ecological/environmental interaction for Tribes as Indigenous peoples is critical and should be mentioned. Non-chemical environmental stressors such as decreased diversity and anthropogenic pollution affecting flora and fauna health, can become human stressors such as food insecurity, malnutrition, and depression.
6. Overall, we suggest modifying the language and veering the tone of the document so that it is more reflective of a guidance document, versus a literature review.
7. The conceptual model at the end of this letter supports our comments on differences in Tribal lifeways and the need for the risk assessment Team to truly consider our population. Tribes and Tribal experts in the geographic area of the risk assessment must be contacted to discuss how they see the risk assessment problem. To note, access to better tribal data is always available to EPA via its own Indian General Assistance Program Project Officers, and the American Indian Environmental Office in general. Their regional and national staffs can connect the Team to tribes in the area and invaluable information in formulating the problem.

⁴ White House Office of Science & Technology Policy and Council on Environmental Quality Memorandums: “*Indigenous Traditional Ecological Knowledge and Federal Decision Making*”, November 2021, Guidance for Federal Departments and Agencies on Indigenous Knowledge, November 30, 2022, Implementation of Guidance Federal Departments and Agencies on Indigenous Knowledge, November 30, 2022.

⁵ Some tribes were forced to relocate away from the lands upon which they had lived for thousands of years, e.g. Trail of Tears, so that their environmental data is limited to “just” 150 years of minutely detailed observations.

8. NTTC commented on the Draft Proposed Principles of Cumulative Risk Assessment Under TSCA, and includes those comments, which are specific to TSCA, by reference here.

Specific Comments

9. **Pg 1** Insert reference to federal Indigenous Knowledge Guidance and its implementation Memorandum into the first paragraph. It is an important point for tribes that we are not minority or underserved ‘communities. Tribes are sovereign nations and have government to government status. For example:

CRA is responsive to national policies, such as Executive Order 13985 on *Advancing Racial Equity and Support for Underserved Communities Through the Federal Government*, and the *White House Guidance and Implementation Memorandum for the Guidance for Federal Departments and Agencies on Indigenous Knowledge*. The former directs all agencies of the federal government to “pursue a comprehensive approach to advancing equity for all, including people of color and others who have been historically underserved, marginalized, and adversely affected by persistent poverty and inequality.” The latter directs and assists all Agencies in... “considering, including, and applying Indigenous Knowledge in Federal research, policies, and decision making.” and notes that consultation and collaboration with Tribal Nations and Indigenous Peoples is critical to ensuring that Indigenous Knowledge is considered and applied in a manner that respects Tribal sovereignty and achieves mutually beneficial outcomes for Tribal and Indigenous communities.

10. **Line 30, Pg 1** Suggest inserting the text in red:

... many of the planning recommendations are generally applicable to CRA for ecological purposes or assessments that integrate human health and ecology. **To note, the latter are particularly critical for accurate representation of risk for Tribes and other Indigenous populations that harvest, prepare, use, and consume resources from the local environment.**

11. **Line 37 - 41, Pg 1.** As worded, inference is that CRA may not be a valid concept, but essentially made up by communities with greater environmental exposure. Suggest modifying with the strikeout and red font inserts below:

The National Research Council (NRC), in *Science and Decisions: Advancing Risk Assessment* (NRC, 2009), notes that many risk assessment applications in EPA and elsewhere “are often centered on evaluating risks associated with individual chemicals in the context of regulatory requirements or isolated actions...” ~~“The NRC states that there is concern among stakeholder groups (especially communities affected by environmental exposure) that~~ **Such** a narrow focus ~~does~~ may not accurately capture the risks associated with exposure, especially for all tribes and those communities affected by environmental exposure, given simultaneous exposure to multiple chemical and nonchemical stressors and other factors that could influence vulnerability.” This concern can be addressed by CRA, which may be implemented **by seeking out** ~~there is~~ adequate information to identify the

relevant risk relationships among multiple chemical and nonchemical stressors, as well as the means to identify those most important to health outcomes.

12. Lines 14 – 20. Consider inserting an example of adverse outcome formulation for tribes as being a better approach, e.g.:

“For example, data specific to unique chemical exposures in tribal communities is often limited such that a systematic review may miss the chemical impact. Yet, tribal health disparities are seen across nearly all major disease categories⁶. By beginning with adverse health outcomes, and then seeking exposures to possible stressors, for example, local food scarcity and forced reliance on poor nutrient foods, lack of adequate sanitation, chemical risk to tribes may be characterized, allowing for chemical management that can reduce such disparities.”

As an alternative, NTTC can provide a simple conceptual model for Tribes that demonstrates this flow.

13. **Pg 4, lines 2nd paragraph.** Suggest inserting a bullet between the 1st and 2nd bullet: adequate data exist to inform the assessment with an acceptable level of uncertainty, and/or in the case of tribes or EJ communities where CRA is typically needed to characterize risk, data is obtained from a more extensive effort inclusive of direct information from the subject communities.
14. **Pg 4, para. 5,** Suggest adding a tribal example – These assessment methods may inform environmental management decisions responsive to community-based needs even if they are not definitive in establishing risk-based associations. For example, a risk management decision regarding fish contamination that is responsive to Tribal communities, whom are unable to change their lifeways, would ban the chemical or process(es) versus enact consumption advisory limits.
15. **Page 3, bottom,** after or prior to listing suitability factors, it should be noted that in the case of tribes, CRA will likely be suitable, because tribes are isolated communities with their own infrastructure. Thus, residents live near water sources receiving their own and potentially other wastewater discharges, waste disposal sites, energy facilities, etc. and they are exposed to environmental contaminants via multiple subsistence-based lifeways. Additionally, they have multiple health disparities of concern.
16. **Pg. 8, line 24 – 28.** Add tribes into the list of external stakeholders. Tribes should be distinguished from the public as they are sovereign governments, not a community.
17. **Pg 9, Text Box 2.** Please insert an example of a Tribal CRA Statement of purpose. NTTC can work with RAF to develop a suitable example. Such an example could serve to illustrate the

⁶ For example, US Dept. of Health and Human Services, Office of Minority Health: <https://www.minorityhealth.hhs.gov/omh/browse.aspx?lvl=3&lvlid=62>

unique exposures tribes might have and the connection between place-based foods and daily activities, e.g., :

The Raven Tribe believes that ongoing water pollution released from nearby Acme factory and Ajax Services affects the health of their members, many of whom obtain over half of their protein from fish which they both harvest and prepare, and whom use the same water for nightly steam baths, and all of whom depend on tribal lifeways for individual well-being, as well as economic stability because alternative protein, of lesser nutrition and high saturated fat, is only available in the store located 35 miles away. To evaluate whether these emissions should be reduced, a quantitative assessment of these two facilities' water pollutants should be conducted to estimate cumulative ingestion and dermal contact cancer and non-cancer risk, with consideration of non-chemical stressors such as the 3-fold higher incidence of diabetes in the AI/AN population.

18. **Pg 10, Table 1.** Add additional tribal lifeways. Possibly under behaviors or practices, add Tribal lifeways (integration and reliance on local environment for food, water, spiritual and cultural practices, and daily activities for all age groups over a lifetime in same locale).
19. **Pg 11, line 29.** Change to local, state, Tribal, and federal.... Tribes are sovereign nations and have a status greater than a state government.
20. **Pg 11, line 32 – 34,** see comment #7 on Indigenous Knowledge Guidance for federal agencies.
21. **Pg 12, 3rd paragraph,** note that Tribes are PESS due to their higher exposure potential to chemicals in the environment and due to their higher susceptibility to chemical and non-chemical stressors. EPA has averred this opinion in several recent documents, such as line 163 – 174, in the Draft Proposed Principles of Cumulative Risk Assessment under the Toxics Substances Control Act (emphasis added):

Under TSCA, the key human populations considered include the general population and PESS such as 163 workers and occupational non-users (ONUs), consumers and consumer bystanders, fence-line communities, **and tribal populations**. TSCA section 6(b)(4)(A) requires EPA to determine whether a chemical substance presents an unreasonable risk of injury to health or the environment—without consideration of costs or other non-risk factors, including to PESS [15 U.S.C. § 2605(b)(4)(A)]. As noted previously, PESS are subpopulations “who, due to either greater susceptibility or greater exposure, may be at greater risk than the general population of adverse health effects from exposure to a chemical substance or mixture, such as infants, children, pregnant women, workers, or the elderly” [15 U.S.C. § 2602(12)]. TSCA does not statutorily define what constitutes “greater susceptibility” or “greater exposure,” thereby providing flexibility to EPA to consider both chemical and non-chemical stressors when identifying PESS. As OPPT continues to develop its approaches for CRA, OPPT will take into consideration PESS in hazard, exposure, and risk methods and results.

22. **Page 12, line 38 - 42**, “The lack of available methods for assessing and quantifying these stressors may limit their incorporation into an analysis plan. When such constraints exist, the conceptual model should flag them for further study or note that any relevant qualitative information be included in the risk characterization for consideration by risk managers. Methods to incorporate such information qualitatively or quantitatively (when possible) should be fully considered during CRA scoping. ...”.

This is an excellent point and very applicable to tribes. Please start a new paragraph through line 42 so that the concept stands out. Tribes face this issue consistently with TSCA risk assessments. The conceptual models should be complete for tribes, even if quantitative data is infeasible to obtain and/or not worthwhile because it is clear a risk will be found unreasonable without such data. Risk management decisions are made in part on the type of exposures present. If Tribal exposures are not identified, a risk management decision, short of banning the chemical, may not eliminate a Tribal exposure. For example, seal meat and seal oil are a source of healthy protein, fat, and vitamins for a large number of Alaska Tribes. A risk management decision to reduce a contaminant in certain water releases, but not for air releases, would not take into consideration long-range transport of contaminants into Alaska waters. NTTC can provide RAF with additional tribal specific examples.

23. **Pg 13**. Tiering and Phasing discussion Section 2.5. This is an excellent place to mention that characterization of tribal risk may be the most conservative assumption in relation to contaminants releasing to and present in the natural environment. Because tribes are exposed to environmental contaminants in multiple ways for high duration, if a Tier 0 assessment does not reveal cause for concern for tribes, then further analysis would not be needed. Protecting Tribes protects the general population and every other subpopulation. The converse is not true. Stepping through the tiers would be necessary still until a tier in which tribes are considered.

We suggest a Table of unique lifeways to help illustrate this point and the importance of cumulative exposures. NTTC can provide such a Table. Tribal exposures differ from those of the general population, workers, consumers, or any other populations. Tribal peoples live and subsist in the local environment for the majority of their lifetime. For example, Tribal people, of all ages including infants, are exposed to contaminants while hunting, fishing, and gathering traditional medicine and foods (e.g. fish, other aquatic species, marine mammals, plants, birds, and game), preparing those foods and medicine, and then ingesting those same foods. Those foods, present within the same local environment, are exposed to and contain the same contaminants. Further, through drying, freezing, fermenting, and smoking processes, a single animal, such as moose, deer, elk, halibut, seal, or whale, is consumed daily over the course of several months, at substantially higher daily ingestion rates than the general population. Ingestion, whole body dermal absorption, and inhalation exposure to the same local chemicals occurs by drinking, cooking, cleaning, and bathing with local waters. This same water may be hauled, untreated, for steam baths or sweat lodges, and used for ceremonial purposes, and plants grown in that water may be masticated daily for long periods of time for basketmaking. Additionally, tribal peoples are exposed at the same time to the same group of chemicals via absorption from touching

sediments, soils, and plants. Inhalation exposure to the same chemicals occurs while spending significant time outdoors, as well as via indoor air. Tribal built environments are also different than those of other populations typically considered in risk assessments. A limited list of characteristics shared by multiple tribes that adds to cumulative exposure includes old and substandard housing and household goods, unpaved roads, use of ATVs, snow mobiles, and boats for daily transportation, and reliance on wood and fuel oil for home heating.

Also, consider mentioning the fenceline community concept and that Tribal communities as fenceline communities. The EPA Office of Pollution Prevention and Toxics published its draft Proposed Principles of Cumulative Risk Assessment under the Toxic Substances Control Act⁷, which includes discussion of fenceline communities. NTTC notes that it is important the Team considers the potential for subsistence activities beyond reservation borders, and throughout Treaty lands.

Pg 15, Text Box 4. Please add a sentence in the first bullet that leads the risk Team to specifically consider tribes, and potentially other communities as needed, in these elements. Multiple personal experiences among Council members and advisors overwhelmingly that indicate the public at large is often unaware that Tribal peoples even live in their region and/or that Tribal lifeways are still practiced. We suggest:

- Develop a conceptual model sufficient to delineate the problem, include all relevant stressors and describe how they might act in combination. In doing so, be cognizant that, by definition, Tribes, other Indigenous Peoples, and other susceptible populations have unique exposures, risk factors, unique stressors, and susceptibilities. These populations live throughout the country and it is incumbent upon the risk assessor to learn what risk factors may demand inclusion in the Conceptual model.

24. **Pg 16, Line 10,** Tribes and other susceptible populations have been historically excluded when data, methodology, and resources are considered insufficient. Please add a sentence similar to the following red font.

If a CRA would not be supported, other strategies, such as those more typical of a cumulative impact assessment (CAL EPA, 2010) or health impact assessment (NRC, 2011a) might be more appropriate. In the case of assessments involving Tribes or other highly exposed and susceptible communities, it is incumbent upon the risk assessor and the Agency to ensure that such an assessment is undertaken, and the reasons for the methodology chosen are communicated to the tribe or community.

25. **Pg 16, Availability of Information section.** Please note that should the Team determine that additional data are necessary, the Team should be responsible for relaying the data need to an appropriate authority so that the Agency has an ongoing list and such needs can be

⁷ <https://www.epa.gov/assessing-and-managing-chemicals-under-tsca/cumulative-risk-assessment-under-toxic-substances>

included in future Agency projects or grant programs. To note, the need for this action was also included in the SAAC Final Report for review of the Draft Pthalate CRA Approach and Draft CRA Principles.⁸

26. **Pg 16, Availability of Resources.** We suggest adding a sentence which again mentions Executive Orders and policies (such as PESS inclusion in the Lautenberg reauthorization of TSCA) that mandate consideration and/or protection of Tribes, PESS, EJ communities, regardless of limited resources.
27. **Page 17, line 28 – 32** Note that the Team should be aware of potential biases in prioritizing data analysis so that concerns of Tribes and other sensitive populations are not inadvertently excluded. Danger of bias is additionally present in Team interpretation of data robustness. Strongly suggest as an example that “grey literature” technical reports often have very good data relevant to the problem. It is key to note that Tribal subject matter expertise provides good data, as well. Tribal cultures evolved with a tradition of oral history and keen observations in relation to the local environment. Indigenous, or Traditional Ecological Knowledge, is built on years, if not millennia of data. The White House Guidance should be applied in a data prioritization process. Many Tribes also have accumulated large quantities of “western science” information on chemical contaminant levels in their water, plants and resources. Much of this data may remain in tribal data repositories. EPA itself funds many programs that have allowed for the collection of this data through funds such as the GAP program⁹.
28. **Pg 18 Risk Management Considerations, under Risk Management Issues.** Please insert a Tribal example. For example, fish and fishing advisories, limiting access to lands, presuming use of PPE, are not appropriate for Tribal communities. Traditional foods cannot be substituted, nor can subsistence activities like harvesting, preparing, and consuming. Ceremonial activities, cultural, artisanal, and functional resource use (e.g. basketmaking, pottery, regalia making, and more), steam baths, and other lifeways are not elective or optional.
29. **Pg 20.** NTTC would like to provide an example of a Tribal DAG. By providing a tribal DAG, many of the requests in this comment letter can be addressed. While we are not able to provide a Council approved DAG by the close of the comment period, we are happy to coordinate with you in developing one to meet the timeframe needed.
30. **Pg 21, line 17, Exposure context and characteristics.** The end of this paragraph is an excellent location for a tribal example. E.g. “For example, duration of chemical exposure can be higher for Tribal communities because of their integration with the local environment for

⁸ <https://www.epa.gov/tsc-peer-review/peer-review-two-draft-documents-proposed-approach-cumulative-risk-assessment-under>

⁹ One example <https://spokanetribe.com/resources/dnr/air-quality/fisheries-and-water-resource-division/#:~:text=Fish%20tissue%20is%20shown%20to,to%20review%20current%20levels%20against>

nearly every life activity. While general population communities obtain their foods from supermarkets and restaurants, which source from a variety of locations, many Tribal members obtain a significant portion or virtually their entire diet from the local environment. If that environment is contaminated, they are exposed in multiple ways for all age groups, including infants and children. Refer to Comment #23 for some examples.

31. **Pg 22** As already described, tribes have very different lifeways, and also different SDOH (see below for a discussion of Tribal determinants). We think highlighting this difference with a parallel conceptual model would be helpful and ensure that Tribes are visible to the risk assessment Team. Figure 4 is a marked step forward for the Agency, especially in recognizing that various community stressors play a role in the internal dose. For example, the boxes might read Tribal Location for Residential location, then Neighborhood Resources might read Reservation/Village Access to Services (Healthcare, commercial & institutional services) and a 5th box on that level might read Treaty/Tribal Land subsistence resources. Resources to Tribal peoples mean local natural resources from the environment in which their people's lifeways developed. Indeed, environmental health is public health in tribal populations.

As an alternative, NTTC can provide a parallel Conceptual model in Appendix C for cardiovascular disease (referenced in line 15 on pg. 22). Cardiovascular disease (CVD) is the leading cause of death among Tribal individuals, and at over 12%, the prevalence rates are higher than any other ethnic/racial category, and that rate is potentially underreported by 21%¹⁰. More than 60% of AI/AN women already have suboptimal heart health when they enter pregnancy, which is strongly related to the development of heart disease later in life. And the prevalence in women of Diabetes Type 2, a primary CVD risk factor, is up to 72% in some Tribes. The American Heart Association states that (emphasis added):

Addressing heart disease risks in AI/AN women requires attention to traditional CVD risk factors and social determinants of health, **as well as understanding how the legacy of colonization, exploitation, racism and discrimination shape the health of AI/AN individuals**¹¹.

Because of their higher duration exposures to the natural environment, as well as poor indoor air and housing condition, tribes may be more exposed to chemicals that may contribute to CVD. For example, "Lead, cadmium, and arsenic have been linked to subclinical atherosclerosis, coronary artery stenosis, and calcification as well as to increased risk of ischemic heart disease and stroke, left ventricular hypertrophy and heart failure, and peripheral artery disease"¹². Tribes with open burning for waste burning, lead shot use for

¹⁰ Status of Maternal Cardiovascular Health in American Indian and Alaska Native Individuals: A Scientific Statement From the American Heart Association May 2023
<https://doi.org/10.1161/HCQ.000000000000117>Circulation: Cardiovascular Quality and Outcomes. 2023;16

¹¹ Ibid

¹² Lamas GA, Bhatnagar A, Jones MR, Mann KK, Nasir K, Tellez-Plaza M, Ujueta F, Navas-Acien A;

hunting, and lead sinker use for fishing, for example could have higher lead levels. NTTC collaborated with EPA to develop a Tribal lead curriculum, containing more specific pathways for Tribes to be exposed to lead.

Pg 24, Line 7. For this sentence: “For exposures to chemicals that elicit a common outcome but are not toxicologically similar, EPA has employed methods that are not based on dose addition, such as response addition” NTTC suggests stronger, more definitive wording, and a statement regarding the potential value of using response addition. NTTC is concerned that in the case described, a Team might determine that a given CRA is infeasible or not suitable. But when it comes to adverse health outcomes, it is Tribes and other susceptible populations with health disparities that may suffer.

32. **Pg 24 Line 25.** Please insert tribes as a specific population as in the red font here, with the justification that tribes are not a PESS community within a larger city or county, but have distinct self-governed areas – reservations and Alaska Native Villages. Treaty tribes also have legally defined rights to subsistence activities extending past these borders, and all Tribes also practice activities in areas that extend into ancestral or customary use.

For example, the initial population of concern could be a Tribe, or a community in a larger city or county, including any identified vulnerable population groups.

33. **Pg 24, Text Box 5.** A Tribal example of the factors to consider would be useful in relaying to the Team how different Tribes are, and provide much useful planning information for Teams that are planning an assessment involving tribes. It can also help to explain the use of Text Box 5. NTTC can work with RFA in developing such a Text Box for placement in an Appendix or within the text.
34. **Pg. 25 Exposure-Response Modifier section.** An example for Tribes would be the region or specific area in which they live because for most Tribal members it is not a choice, they live where they are from¹³. Their food is much more specific to the area, versus the NHANES supermarket in Texas basket. Many who move away still come back to do subsistence and/or partake of foods and use artifacts made from that region. In essence fish, plants, wildlife, marine mammals act as a medium. If this medium is contaminated, Tribes will be more exposed.

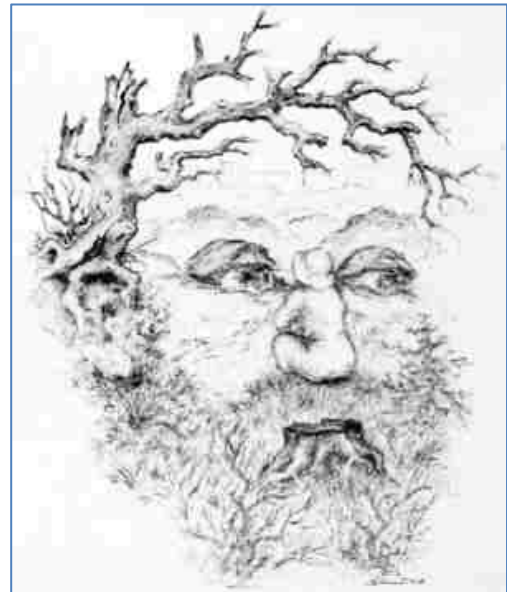
American Heart Association Council on Epidemiology and Prevention; Council on Cardiovascular and Stroke Nursing; Council on Lifestyle and Cardiometabolic Health; Council on Peripheral Vascular Disease; and Council on the Kidney in Cardiovascular Disease. Contaminant Metals as Cardiovascular Risk Factors: A Scientific Statement From the American Heart Association. *J Am Heart Assoc.* 2023 Jul 4;12(13):e029852. doi: 10.1161/JAHA.123.029852. Epub 2023 Jun 12. PMID: 37306302; PMCID: PMC10356104.

¹³ Reservations do not move. Arquette M, Cole M, Cook K, LaFrance B, Peters M, Ransom J, Sargent E, Smoke V, Stairs A (2002) Holistic risk-based environmental decision making: a Native perspective. *Environ Health Perspect* 110(suppl 2):259–264. <https://doi.org/10.1289/ehp.02110s2259>

Suggest changing this sentence “ *Exposure-response modifiers associated with the community level ...*” on line 25 to “ *Exposure-response modifiers associated with the community or Tribal level ...*”

35. **Pg 25, line 26.** The SDOH are mentioned. NTTC believes it very important to mention that Indigenous Peoples by and large have a very different view of the world – holistic versus specific – in which environment and health are one. Work has been carried out in the U.S. to develop a Tribal Determinants of Health model¹⁴, as well as globally for similar Indigenous Determinants of Health models.¹⁵ It is for this reason that we suggest employing a tribal conceptual model in the Guidelines. Conveying Tribal Determinants of Health will, make a stronger argument for ensuring tribally-based information is sought out and considered by the Team in formulating the problem. TDOH at base highlight the need to integrate human health and ecological health risk for Tribes.

While this “Spirit of the Woods” drawing by Sandro Del Prete¹⁶ to the right may not belong in the Guidelines, it illustrates the difference between a Western oriented worldview/SDOH where people are separate from the environment (the person sitting down looking out over onto the tree, field, and houses) and an Indigenous/Tribal oriented worldview/TDOH where people are the environment (bearded man’s head made of the tree and fields). How to best describe and approach the problem of risk that each person faces (the field gazer and the bearded man) is different, even though the delineated region/site under scrutiny by the Team is the same. NTTC holds that quantitative analysis of Tribal risk is possible with reasonable accuracy.



Analogous to sketching the outline of the bearded man, the primary pathways and outcomes interconnecting tribes, the environment, the chemical contamination, and health can be identified more clearly if started from an understanding of the nature of Tribes and their lifeways.

¹⁴ Donatuto J, Campbell L, Gregory R. Developing Responsive Indicators of Indigenous Community Health. *Int J Environ Res Public Health*. 2016 Sep 9;13(9):899. doi: 10.3390/ijerph13090899. PMID: 27618086; PMCID: PMC5036732. And Donatuto, J., Campbell, L. & Trousdale, W. The “value” of values-driven data in identifying Indigenous health and climate change priorities. *Climatic Change* **158**, 161–180 (2020). <https://doi.org/10.1007/s10584-019-02596-2>

¹⁵ For example, Indigenous Health Indicators A participatory approach to co-designing indicators to monitor and measure First Nations health, Alberta First Nations Information Governance Centre, Apr. 2018

¹⁶ Accessible at <http://brainden.com/face-illusions.htm>

Pg 25 Text Box 6 Exposure - Response Modifiers vs Stressors For Tribal peoples, the two factors overlap because there is no lifeway choice, and intergenerational trauma is present regardless of where they live or who they are. According to Dr. Maria Brave Heart, who first applied Holocaust research to Tribal experience and recognized the concept of historical trauma of Native peoples in this country, “Historical trauma is the “cumulative emotional and psychological wounding over one’s lifetime and from generation to generation, following loss of lives, land and vital aspects of culture.”¹⁷ As part of an ongoing longitudinal study of American Indian families in the upper Midwest, Whitbeck et al (2004) developed measures of historical trauma with high internal reliability, documenting anxiety and depression, along with frequent thoughts pertaining to loss of land among American Indian parents¹⁸. Substance disorder, affective disorder, conduct disorder, and PTSD have all been associated with historical trauma in the AI/AN population. A 2016 study of American Indian college students, historical loss was associated with depressive symptoms, indicating a pervasive co-stressor for Tribes, regardless of age or education.¹⁹ ACE-related methylation changes that regulate the stress response have been found to contribute to health disparities in Native Americans, and such changes have been linked to epigenetic modifications²⁰ As included in comment #22, in a 2023 study, the American Heart Association documented a role of historical trauma as a stressor in CVD. Research on intergenerational trauma is continuing to reveal not only greater linkages to health outcomes, but greater detail as to its extent, including a comprehensive accounting of Boarding School atrocities and cultural assault visited upon Tribal peoples published today in the New York Times²¹.

36. **Pg 25, Line 14.** An Tribal example of behavioral variability that can modify exposure response is mastication for softening reeds for baskets, or of whale blubber by mothers to give to their infants.

37. Appendix D (pg 25).This is an excellent Appendix and speaks to multiple Tribal concerns. NTTC requests that a sentence be added to the first paragraph on pg D-20:

“ecological receptors can also exhibit traits or behaviors that could affect their ability to respond to stressors or could reduce their resilience. Examples of vulnerable

¹⁷ Brave Heart, Maria. (2000). Wakiksuyapi: Carrying the historical trauma of the Lakota. *Tulane Studies in Social Welfare*. 21. 245-266. -

¹⁸ Whitbeck et al 2004 In a 2004 study, *American Journal of Community Psychology*, Vol. 33, Nos. 3/4, June 2004

¹⁹ Tucker RP, Wingate LR, O’Keefe VM. Historical loss thinking and symptoms of depression are influenced by ethnic experience in American Indian college students. *Cultur Divers Ethnic Minor Psychol*. 2016 Jul;22(3):350-8. doi: 10.1037/cdp0000055. Epub 2015 Sep 14. PMID: 26371791.

²⁰ Brockie TN, Heinzelmann M, Gill J. A Framework to Examine the Role of Epigenetics in Health Disparities among Native Americans. *Nurs Res Pract*. 2013;2013:410395. doi: 10.1155/2013/410395. Epub 2013 Dec 9. PMID: 24386563; PMCID: PMC3872279.

²¹ Native American Board Schools Took Children’s Culture and Hundreds Died, <https://www.nytimes.com/interactive/2023/08/30/us/native-american-boarding-schools.html?smid=nytcore-android-share>

populations include wetland stressed by human development and an endangered species stressed by land use interactions.” It should **be noted for Tribal and other Indigenous populations, and some rural communities, ecological stress is directly linked to human stress, as well as to food security, and malnutrition.**

38. Pg 26, Line 10, Consider adding local wildfood/country/ subsistence food resources to the examples of environmental media. In this way, wildlife contamination can be directly linked to Tribal people’s contaminant exposure.
39. Pg 27, Line 6 *“WoE begins with identifying available sources of evidence (e.g. through a literature search or survey of community identified stressors) “ . The latter example is important to tribes. Please modify to a statement similar to ‘WoE begins with identifying available sources of evidence, through a literature search when it is appropriate, or a survey of community-identified stressors, which will likely be more appropriate when the problem concerns, or includes, a Tribal or other PESS population and little relevant literature is available. When working with Tribes, consider their Traditional Ecological Knowledge, as required by the White House Guidance on Indigenous knowledge.’*
40. **Pg 27, Lines 20 – 30.** This paragraph is highly important to NTTC and Tribes, as it speaks directly to an issue that has surfaced in TSCA risk evaluations multiple times.
41. **Pg 27 Lines 31 to 33** concerning the importance of community observations. This also is a valuable paragraph. Please insert ‘Tribal’ in front of community as in *‘ Tribal and community observations are significant from a practical standpoint and provide insights into the problem and assumptions by or about the tribe or community. Tribal and Community observations might include...’*

Conclusions

Under TSCA, EPA has a responsibility to evaluate risks to tribal people, and other populations that are more highly exposed and/or more susceptible to chemical exposures. To evaluate risk for Tribes requires a CRA, which in turn requires appropriate formulation of the problem and appropriate planning for the resources, including time and staffing needed to amass the relevant data.

EPA cannot conduct quantitative analysis without the necessary tribally relevant data and it is EPA’s responsibility to ensure the generation of those data and to finance the effort. NTTC recommends that EPA fund a forum on Tribal risk and the formation of a panel of experts to best accelerate the full implementation of CRA, inclusive of relevant exposures, inclusive of non-chemical stressors, and inclusive and integrative of ecological impacts. NTTC volunteers to help develop this suggestion as soon as possible. In this way, the RAF’s Guidance for CRA can be used and executed through to a risk finding that Tribes can trust as a reasonable characterization of their risk, and Tribal peoples can be protected through appropriate risk management decisions. And because Tribal risk assessment involves a conservative assumption

of exposure risk for a susceptible population, when protecting Tribes, EPA fulfills its mission of protecting all Americans.

In closing, NTTC believes The Draft Guidelines document is an excellent example of EPA's growing commitment to better protect Tribes and other vulnerable populations. Its inclusion of non-chemical stressors, particularly psychosocial factors, which would include intergenerational trauma, is monumental. In these comments, we attempted to find places in the document that could be improved by inserting a reference to Tribes, and that could highlight unique tribal risks and the vital importance of considering and addressing them. Not all suggestions need to be included in the document to accomplish this. We hope to coordinate with you to provide conceptual models and a Text box inset that can raise the visibility of Tribal circumstances to risk assessment Teams and provide useful elaboration of document text.

Should you or your staff have questions or comments regarding this letter, please contact Dianne Barton, at (503) 731-1259 / bard@critfc.org or Susan Hanson at susanhanson9@icloud.com.

Sincerely,



Dianne C. Barton, Ph.D.

Chair, National Tribal Toxics Council

Contribution of Tribal Lifeways and Environment to General Exposure Scenarios

