

Remediation Standards External Stakeholder Committee

Meeting summary for August 12, 2014 with external stakeholders

1pm in Public Hearing room (PHR)

Attendees: see attached list

1. T. Sugihara (TS) welcomed the audience of 13 DEP personnel and 18 external stakeholders (SH) plus 3 SH attending via Go-To-Meeting.

He clarified that our schedule for readoption of the remedial standards has moved from our original proposal target date of December 2014 to June-December 2015. Our tentative 2015 meeting schedule has been set and will be sent out to all in an email.

TS asked if there were any comments on the 6/10/2014 meeting summary that had been posted and got a negative response. The current 6/10/2014 meeting summary will be considered final.

On 7/7/2014 the Department sent out a lot of new information (17 documents) including tables with the newly proposed standards. Updates to these tables will be sent as needed via email, and the changes will be posted as revised tables as well. These documents will be the focus of today's meeting.

TS mentioned correspondence received from Site Remediation Industries Network/Chemical Council of New Jersey and the Licensed Site Remediation Professionals Association (LSRPA), as well as New Jersey Builders Association (NJBA) and John Donahue of the Fuel Merchants Association, regarding the remediation standards amendment process. Except for the 8/5/2014 LSRPA letter, the focus of the letters appeared to be on the technical exchange meeting tentatively planned for September. While recognizing the potential overlap with today's meeting, the suggestion was made to deal with the specific issues raised at that time. There was no objection from the authors/audience and the matter was deferred.

TS handed over the podium to Scott Drew (SD) to represent the LSRPA and lead the meeting regarding the questions that were detailed in their 8/5/2014 letter on the proposed standards.

2. SD took the podium at 1:24pm. He stated that he intended the ensuing discussions to be interactive, and that we would deal with each question from the 8/5/14 LSRPA letter separately. Consequently, the topics to be covered in this meeting will include the five areas (Parts 1 – 5) contained in the letter. SD introduced Kevin Long (KL) to handle the discussion of this first part.

3. Part 1: The external stakeholder concerns and issues with the equations used to calculate the preliminary values for the various pathways.

- **The Department should develop cancer and noncancer based soil standards, consistent with USEPA risk assessment guidance, which account for cumulative exposure across routes of exposure (ingestion, dermal contact, and inhalation). For the residential noncancer SRSs, the Department should utilize an age-adjusted exposure calculation that accounts for combined exposure during childhood years and adult years.**

Linda Cullen (LC) asked, “Do you intend to speak to Risk Assessors at the United States Environmental Protection Agency (USEPA) to see if they are doing these things you’re suggesting?”

KL: From my experience in completing risk assessments under Superfund and RCRA, I recognize that USEPA uses the child only exposure calculation in combination with chronic toxicity values in deriving screening levels (e.g., USEPA’s Regional Screening Levels). However, as recommended by USEPA’s Science Advisory Board and as noted in USEPA’s Soil Screening Guidance, under RCRA and Superfund, decisions regarding the need for risk management (e.g., remedial action, institutional controls, etc.) should be based on noncancer risks determined using an age-adjusted calculation that accounts for exposure of a resident both as a child and subsequently as an adult.

LC: We are under USEPA Region 2, and I am in constant contact with their risk assessors. In developing standards, we try our best to stay consistent with USEPA, but we do not always correlate exactly: we use professional judgment on a site by site basis.

KL: One option the Department may wish to consider should they choose to continue calculating the generic residential noncancer SRS using the child only approach (with chronic toxicity values) would be to ensure that the regulation provides folks with the opportunity to derive site-specific alternative residential remediation standard (ARSs) that are derived using the age-adjusted exposure calculation. Doing so would be analogous to USEPA’s use of the child only exposure calculation (with chronic toxicity values) in the calculation of “screening levels”, but use of the age-adjusted exposure calculation in the

estimation of chemical specific noncancer hazard quotients to support final remedy decisions.

LC: USEPA uses chronic data for the child's 6-year exposure for calculating the noncancer Hazard Index (HI), and it is admittedly conservative. However, since the 1993 and 1996 guidance manuals you are quoting from, USEPA has been criticized by the Science Advisory Board (SAB) for not being protective enough of children. Both the Department and USEPA have made efforts to respond to that criticism (USEPA developing the mutagenic mode of action; Department using residential standards for daycare and schools). I polled five risk assessors at USEPA Region II and asked if they use the age-adjusted calculation that accounts for combined exposure during childhood years and adult years. All said that they do not develop remediation goals using this methodology. They either just present the child exposure alone or present the child and the adult separately, but base the remediation goal on the child exposure.

Based on our mandate to be consistent with USEPA and our commitment to the protection of children, it would be difficult for Department to consider coming off the current approach in the draft standards.

KL: I'm not familiar with specific criticism raised against the recommendations of EPA's Science Advisory Board which explains that the use of chronic toxicity values with the age-adjusted noncancer residential exposure calculation is likely to be "adequately conservative". I do recognize that USEPA has been enhancing risk assessment guidance to provide for approaches intended to ensure that risk assessment methods employed will result in decisions that are adequately protective, including children (e.g., inclusion of ADAF adjustments for mutagenic chemicals for cancer risk calculations) however, we should recognize that for noncancer risk, the derivation of noncancer toxicity values already include additional uncertainty factors which are used to ensure protectiveness of sensitive subpopulations including children.

LC: I understand your point, and am aware, but USEPA is not using that approach.

KL: I disagree. I'm not aware of any decision from USEPA that would indicate that the recommendation made by the EPA Science Advisory Board would not be adequately protective for residential receptors (including of children). In my experience in working on Superfund and RCRA baseline risk assessments, while the child only calculation may be used (with chronic toxicity values) to derive initial screening values, the age-adjusted calculation is used in support of final remedial decisions.

LC: I'll follow up with USEPA on this.

Barry Frasco (BF): Relative to noncancer health endpoints, do you have any concerns for combining pathways for ingestion and inhalation health endpoints that are different for these pathways?

KL: I recognize that different chemicals can have different critical noncancer effects and as a result, noncancer risk estimates (i.e., hazard quotients) could be segregated. I suppose that such critical effects could be different for different exposure routes (e.g., inhalation vs. ingestion) and under such a condition calculating a combined SRS could be determined to be overly protective. That said, I am not a toxicologist, but an engineer. In my experience, decisions regarding when to segregate estimated noncancer risks (i.e., hazard quotients) by target effect (target organ) is one that should be done in consultation with a toxicologist.

4. Part 2: The external stakeholder concerns and issues with the toxicity values used to calculate the preliminary values for the various pathways.

- **The use of chronic toxicity values (rather than subchronic toxicity values) in deriving the residential child only SRSs represents an overly protective approach.**
- **The Departments approach in applying a 10-fold adjustment to noncancer calculation for Class C contaminants is not consistent with generally accepted approaches for developing remediation standards**

KL: The use of chronic toxicity values rather than subchronic for residential child exposure is overly conservative.

BF: Per the prior discussion, would you suggest, instead of using subchronic toxicity values for this calculation, that the residential noncancer SRS utilize the age-adjusted exposure calculation in combination with chronic toxicity values?

KL: Yes

KL: Also, use of a 10x adjustment for Class C carcinogens is not consistent with approaches for remediation standards or indoor air screening levels (IASL) and we suggest you consider eliminating them from the derivation.

BF: Class C adjustment is Department policy for all programs; USEPA is inconsistent in their application of this policy (within Superfund and RCRA they don't use, but they have in establishing drinking water standards (?)).

- **USEPA's Integrated Risk Information System (IRIS) notes that ethyl benzene is a Class D chemical. As such the Department should not be assessing ethylbenzene as a carcinogen.**

Diane Groth (DG): The Department looks at all available toxicity information and follows the hierarchy as appropriate. The IRIS assessment was in 1991 with the Class D cancer classification based on the contaminant not being classifiable due to a lack of studies. The assessment notes that National Toxicity Program (NTP) plans on doing studies. The California Environmental Protection Agency (CalEPA) toxicity information is from 2007 updated 2011 and is based on a 1999 NTP rat inhalation study where “clear evidence” of kidney cancer was found. Some evidence was also found for lung and liver cancer but CalEPA used the kidney endpoint due to the clear evidence association. IRIS did not have the NTP 1999 study available at the time of their review.

The Department used the most recent information to evaluate ethylbenzene. In terms of International Agency for Research on Cancer (IARC), while they determined inadequate evidence for cancer in humans, IARC determined sufficient evidence of cancer for the contaminant based on animal studies. That is typical in that most contaminants do not have available human studies, and the cancer determination is made based on animal studies.

KL: Are there other chemicals evaluated like this?

DG: Yes, we look at them all by using the hierarchy, with IRIS being first.

KL: USEPA tells you how to look at the new data, but don't rely on just the newest dates.

DG clarified that the Department did follow the hierarchy, as appropriate, in that the first source was IRIS where the available noncancer reference concentration (RfC) was used. Consistent with the hierarchy, while IRIS did not have a cancer value available, it was determined appropriate to use the CalEPA value based on the updated 1999 NTP study. The new NTP study was also alluded to in the IRIS assessment. Information obtained from IRIS indicates that USEPA has just begun updating the assessment but it is anticipated it could take 2 years to complete.

LC: The Department is very careful, and we go back to all the studies available

KL: Could the Department provide some information on why dioxin is being treated differently?

LC: We use professional judgment; also, we have 20 years of accumulated data and information on dioxin.

DG: We use IRIS as our first choice in Tier 1, but the cancer issue for ethylbenzene led us to CalEPA and the NTP study...we use the latest info plus the hierarchy listing.

KL: Dioxin is a known human carcinogen.

LC: We struggle with dioxin, but we use the most recent information, our best professional judgment and most recent science to reach a decision.

5. Part 3: The external stakeholder concerns and issues with the chemical and physical parameters used to calculate the preliminary values for the various pathways.

- **Use different physical/chemical factors**

KL: LSRPA suggests that the Department utilize the same approach used in selecting physical/chemical parameters used by the Department in 2008 as the LSRPA believes that this approach was more robust and technically defensible than currently proposed approach. In 2008, the Department used the values presented in USEPA's Soil Screening Guidance (SSG) and its recommended hierarchy of sources. The approach used by USEPA in the SSG (which the Department applied in 2008) was based upon the extensive evaluation of physical/chemical values from many sources. They also addressed the difficult issue of selecting values from multiple valid measurements. It was subject to extensive public comment and it was well documented. The proposed approach may lead to the use of values that lack robustness and technical defensibility. The proposed approach may also result in the use of values that fall outside of the range of available measurements. (Benzene was given as an example.)

Paul Sanders (PS): The sources of data for most of the chemical properties (Henry's law constant, water solubilities, air and water diffusion coefficients) are similar to what they were in 2008, whether from the old database (Superfund Chemical Data Matrix) or the new database (EPI Suite). Values from the two databases are the same. However, values for chemical properties are not static, they are updated over time based on continuing research.

The soil organic carbon water partitioning coefficient (Koc) has the most significant changes due to a change in the estimation method. This parameter is estimated because it is difficult to measure. We are following USEPA recommendations in switching to the molecular connectivity index method. Overall the new estimation technique shows an overall improved correlation with measured Koc values. DDT, polynuclear aromatic hydrocarbons (PAHs) had old Koc values that were overestimated compared to measured values, the new values are closer. You win some, you lose some, but overall there is a better correlation.

6. **Part 4: The external stakeholder concerns and issues with any of the 17 provided documents.**

There were none.

7. **Part 5: The external stakeholder issues and concerns with any preliminary value for a specific contaminant, pathway, or exposure scenario.**

- **SD returned to discuss individual compounds; most are ones that went down.**

SD: **PAHs: Why did residential numbers go down while nonresidential increased?**

LC: For carcinogenic PAHs, the draft proposed standards are incorporating both an age dependent adjustment factor (ADAF) and a change in several exposure variables. The ADAF adjustment is only applied to the residential scenario (child and adult scenario) and lowers the proposed standards. The nonresidential scenario does not have an ADAF adjustment (adult only scenario), but the new Superfund exposure assumptions for this scenario make the proposed standard higher. There is no Koc effect.

SD: **PAH PQL's:** Since PQL's for certain PAHs are below background in many areas, we think **the Department should consider using background levels in place of PQL's**, like Brownfields does. Clean fill becomes an issue with these low numbers (dredge spoils, recycled concrete).

BF: Relative to natural background, you could argue that diffuse anthropogenic pollution (DAP) is covered under the Brownfields Act. Relative to established background in lieu of PQL's...that's a valid point. The problem is figuring out valid background numbers with no money available to fund a study. We are looking into establishing a database of future background studies done by responsible parties at specific sites that everyone has access to. This won't happen now, but hopefully later.

SD: Will that be in the Rule?

BF: You can do a background study now, on a site-specific basis, under the current rules. This site-specific background value establishes a level, below which you do not have to remediate a site.

TS: I would expect the background values are going to vary considerably in part due to DAP. How realistic is it to expect there is one number that is representative of a state-wide background? This makes it problematic to limit a state-wide standard using a single background value.

SD: The 2008 Technical Requirements provided some guidance on concentrations of PAHs in historic fill -maybe it would be similar since historic fill has a wide range. Maybe we as LSRPA could help with collecting data for a background study database.

- SD: **di-n-octyl phthalate standard is much lower . Why?**

LC: For the ingestion-dermal pathway, the current standard is based on an NCEA value resulting in a residential standard of 2,400 mg/kg and a nonresidential standard of 27,000 mg/kg. The NCEA value has been withdrawn and replaced with an updated PPRTV tox value (2012) resulting in a residential standard of 620 mg/kg and a nonresidential standard of 9,200 mg/kg. Inhalation standards are not applicable.

- SD ceded the podium to Lisa Campe (LCa) to handle the inhalation exposure issues.

LCa: **We think the draft standards exposure scenarios for inhalation are overly conservative and improbable for VOs in ambient air.**

No one can be outside breathing volatiles released from exterior soil for 24 hours/day, 7 days per week for 26 years. The key exposure point of concern for inhalation of vapors is in indoor air inside a structure. We believe that, as a screening tool, it may make sense to provide “trigger” levels for Volatization from soil into ambient air, but these should not be the basis for derivation of remedial standards. We need to be reasonably conservative and still protective. My research suggests that somewhere between 1-2 hours outside/day at a single exposure point (i.e., outside of a residence) is a reasonably conservative exposure assumption .

BF: Do you have data for a higher percentile?

It would be interesting to see the 50th percentile vs the 95th percentile curve...Is it bell-shaped, is it skewed? Do you know the distribution of the data?

LCa: The available and pertinent data is skewed, often with a statistical “outlier” for a rare scenario. The majority of data is 20 years old; there is a limited amount of new data on distribution of time spent outside. I will look for distribution data for the September meeting. In all the data I have ever collected, I have never had appreciable levels in ambient air data. **We suggest that the Department consider revising this exposure scenario.**

Alan Motter (AM): We have to look at reasonable maximum exposure (RME) for both indoors and outdoors. It is not the same person, but two different receptors. The 24 hours used in the current standards is consistent with what USEPA uses. If a compelling study is

presented which changes this exposure, we would certainly consider it. We have to look at RME, not 50% or an average, again to be consistent with USEPA.

LCa: Risk Assessment Guidance for Superfund (RAGS) defines RME not always as upper bound value. That would be overly conservative; 2 hours per day is an USEPA recommended value. We contest using the upper bound for every parameter because USEPA does not, except for Regional Screening Levels.

AM: We aren't adding pathways, but using individual pathways

LCa: We need to avoid redundancies

AM: Not cumulative, so not redundant

LCa: I'll provide more data at September meeting

LC: RAGS Part A underwent extensive reviews and no "redundancy" argument from the reviewing agencies was ever presented. RME is considered correct and it does not use the upper bound each time, we know that. That's why it's not considered redundant.

LCa: Because the USEPA ultimately use cumulative risk assessment to determine if cleanup is warranted and to set remedial goals, the potential redundancy issues for the screening levels is moot. Redundancy is a concern for different applications of screening levels vs. cleanup levels, as being proposed by the NJDEP.

Because of the lack of significance of this pathway, the Department should consider incorporating a more reasonable pathway.

AM: The ARS process allows for different exposure times.

- **SD: Manganese (Mn) standard is changing. Why?**

AM: The change is due to not using vehicle traffic in the nonresidential exposure scenario, so the number goes up. LC will answer the ingestion/dermal portion of this question.

LC: There was a residential change in IRIS for dietary consumption; if diet controls are removed, the number changes.

KL: Surprised that background exposure is accounted for in the derivation of the toxicity value used to evaluate risks due to exposure to Mn in soil. Would be interested in understanding why Mn is treated this way and other compounds (e.g., other metals) are not.

LC: When IRIS is the source of the new info, we would accept it; there could be others that are in the review process, I don't know.

KL: I believe that the USEPA Regional Screening Level's users guide provides some details on the interpretation and use of the Mn toxicity value in the derivation of screening levels.

LC: The user's guide relates back to the IRIS manager. I'll follow up with IRIS to find out if there are other compounds not reviewed yet. I'll have the info for the Sept meeting.

- **SD: Migration to Ground Water (MGW) standard for benzene is higher than current Impact to Ground Water (IGW) value, based on different Koc. Recommend the Department use the 2008 approach for physical/chemical parameters since it is more robust.**

PS: Koc is part of it, but the bigger reason is that Ground Water Quality Standards (GWQS) are used as the basis, which brings it up by a factor of 5.

- **SD: MGW standards for phthalates are going down. Why?**

PS: Because the Koc change was large.

- **MGW standards not proposed for many PAHs except BaA. Why?**

PS: Soil saturation concentration is the reason. Before the number was based on avoiding NAPL formation, but now it's health-based only. BaA has a health-based number below the soil saturation concentration, so a number was proposed.

- **SD: 1,1,1-TCA direct contact standard higher, but MGW lower. Is this due to GWQS?**

PS: This change is due to a change in Koc, but also a rounding issue.

Swati Toppin (ST): The change in direct contact is due to a newer toxicity value which was incorporated into the direct contact standards but was not incorporated into the GWQS, so GWQS stayed the same. MGW dropped due to the newer Koc dropping.

SD: there's nothing we can do about the GWQS, I assume?

ST: No, not this time around.

SD: We have no more questions; I think this was a great session. We'll have presentations ready for the September meeting, which I'll forward to you before the meeting.

- **LCa: Half the MGW standards went down, but leachate stayed the same or went up. Is a change in Koc the reason?**

PS: Yes, a change in Koc or use of GWQS.

BF: In November or December 2013 the Department changed the DAF, so leachate numbers changed then. That's why leachate hasn't changed again now.

- Rayna Laiosa (RL): **Why are IGW standards changing from health-based to GWQS?**
BF: GWQS are based on PQLs for compliance and back-calculated to the actual standard.
MGW only changing for those that are based on the PQL.
8. This marked the conclusion of the portion of the meeting dealing with the 8/15/2014 LSRPA letter.
 9. **TS inquired whether there were other questions, concerns, or issues by non-LSRPA representatives. There were none.**
 10. **TS inquired if we are done talking about the numbers and how the Department generated them. Are we moving on to the technical exchange at the September meeting? There were no objections to moving on.**
 11. Meeting adjourned at 3:02 PM and GoTo connection ended. Next meeting Tuesday, September 16, 2014 at 1:00 PM in the 401 East State Street, First Floor Public Hearing Room.

8/12/2014

Remediation Standards Meeting Attendees

Name

Company

LSRPA:

Caryn Barnes	Langan Engineering & Environ Svc
Lisa Campe	Woodard & Curran
Scott Drew	Geosyntec Consultants, Inc.
Rodger Ferguson	Pennjersey Environmental Consul.
Laurie Gneiding	AMEC Environ. & Infrastructure.
Kevin Long	ENVIRON
Carrie McGowan	EHS Support, LLC
Steve Posten	AMEC Environ. & Infrastructure.
Lisa Voyce (via GoTo)	HDR, Inc.

AEG:

Niall Henshaw	Parsons
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Municipal/Planner:

Joe Baladi

Environmental/EJ:

Joann Held	NESCAUM
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SRIN:

Steve Chranowski Chemistry Council of NJ

Rayna Laiosa (via GoTo)

CIANJ:

Rose DeLorenzo (via GoTo)

Anthony Russo

NJBIA:

George Tyler

Sharon McSwieney

Tyler Seville

NJBA:

Neil Rivers

Fuel Merchants NJ:

John Donahue

NJDEP

Teruo Sugihara SRP/BEERA

Barry Frasco SRP

Yin Zhou	DOL
Swati Toppin	BEERA
Diane Groth	BEERA
John Ruhl	BEERA
David Barskey	BEERA
Linda Cullen	BEERA
Paul Sanders	BEERA
Anne Hayton	BEERA
Kathleen Kunze	BEERA
Allan Motter	BEERA
Gloria Post	Office of Science