Presentation to the Scientific Review Panel on Toxic Air Contaminants

Trimethylbenzenes Reference Exposure Levels (RELs) - Technical Support Document for the Derivation of Noncancer RELs

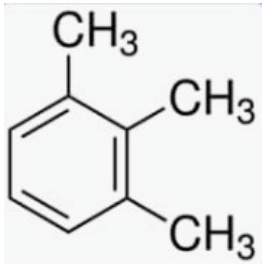
Office of Environmental Health Hazard Assessment

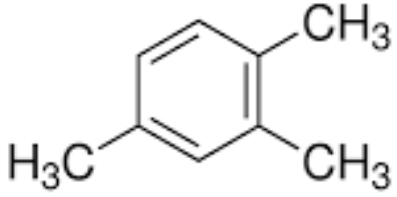
June 16, 2023

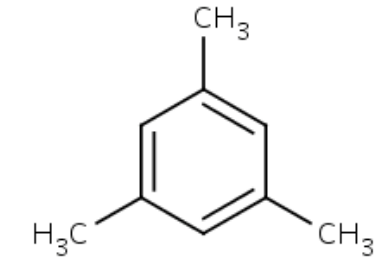
Trimethylbenzenes (TMBs)

Trimethylbenzenes exist in (3) isomeric forms:

- 1,2,3-trimethylbenzene (hemimellitene)
- 1,2,4-trimethylbenzene (pseudocumene)
- 1,3,5-trimethylbenzene (mesitylene)







TMBs: Chemical-Physical Properties

- Molecular formula C_9H_{12}
- Volatile aromatic hydrocarbons
- Clear, colorless liquids at room temp (25°C)
- Nearly insoluble in water (range 48-75 mg/L @ 25°C)
- Boiling points range from 164.7-176.1°C @ 760 mm Hg (torr)
- Vapor pressures range from 1.69 – 2.48 mm Hg (torr) @ 25°C

TMB: Uses and Occurrence

- TMBs occur naturally in petroleum deposits and are common components of petroleum refinery distillation fractions: white spirit, high flashpoint naptha, and gasoline
- Also emitted by steel-making facilities and coal-fired plants
- Other emission sources include construction, cement, paving mixtures, asphalt and metal coatings, as well as other sources
- TMBs are found in printing inks, paint solvents, hydraulic fracturing fluids, and as a pesticide additive
- All (3) TMB isomers are found as constituents of biogas (municipal landfills)

TMB: California Emissions

- Trimethylbenzenes (aggregated) and 1,2,4-TMB stationary point source emissions are reportable to the California Air Resources Board (CARB) under the Hot Spots Program
- For 2020, 1,141 lbs of Trimethylbenzenes (from 34 facilities) and 55,839.5 lbs of 1,2,4-TMB (from 485 facilities) were reported
- This does not necessarily represent every source of TMB emissions in the state; only those applicable to AB 2588 (Air Toxics Hot Spots Information and Assessment Act, 1987)

TMB: Toxicokinetics

- In humans, TMBs are readily absorbed via inhalation (high respiratory uptake)
- Based on their blood/air and oil/air partition coefficients, accumulation in adipose tissue is expected
- In both animals and humans, the 3 TMB isomers demonstrate similar metabolic profiles
- Currently, it is not known which cytochrome P450 isozyme is most responsible for TMB metabolism

TMB: Toxicokinetics (continued)

- All 3 isomers metabolize primarily to dimethylbenzoic and hippuric acids
- In humans, exhalation of the unchanged parent compound is an important route of elimination (20-37% of the absorbed amount, depending on the specific isomer)
- Urinary excretion of unchanged TMBs is very low (< 0.002%)
- In human toxicokinetic studies, following a 4 hr exposure to 25 ppm 1,3,5-TMB, the majority of the absorbed dose was excreted in the first 50 hrs post-exposure; however, urinary levels of metabolites were still detected 160 hrs post-exposure

TMB Acute Effects: Humans

- Paucity of viable human data for an acute REL (≤ 24 hour exposure)
  - Human exposure studies consist only of chamber studies, largely conducted in healthy adult males, that evaluated sensory irritation (25 ppm for up to 4 hrs)
  - No evidence of respiratory irritation, CNS toxicity or other toxicity (self-reported) in human exposure studies
- Effects on the nervous system are seen in acute animal studies - and these form the basis of the Acute TMB REL

TMB Acute Effects: Experimental Animal Exposure

- Acute exposure to TMBs causes primarily respiratory and neurotoxic effects in animals. Exposure duration in most of the acute TMB animal inhalation studies was from 4-6 hours
- There is one animal inhalation developmental study with exposure to TMBs (Saillenfait *et al.,* 2005)
  - Significant decreases in maternal body weight and food consumption @ concentrations of 300 and 600 ppm 1,3,5-TMB and 1,2,4-TMB, respectively
  - Significant dose-dependent decreases in fetal body weights @ 600 (5%) and 900 ppm (11%) 1,2,4-TMB, and 600 (5%) and 1200 ppm (12%) 1,3,5-TMB, compared to control animals
- The Saillenfait et al. (2005) developmental study was not used for the Acute REL because neurotoxicity proved a more sensitive endpoint; Saillenfait did not evaluate neurological/behavioral endpoints

TMB Acute Effects: Experimental Animal Exposure (continued)

- The McKee *et al.* (2010) neurobehavioral inhalation rat study was conducted on 3 consecutive days (up to 8 hrs/day). Rats were exposed to 0, 125, 1250 or 5000 mg/m^3 (0, 25, 250, or 1,000 ppm) 1,2,4-TMB, and tested after each exposure
- Significant increases (latencies) in a number of neurobehavioral tests were seen after a single 8-hour exposure to 5,000 mg/m^3 (1,000 ppm) 1,2,4-TMB
- Significant latencies have been observed in several acute animal studies following exposure to TMBs

Acute REL Derivation for TMBs

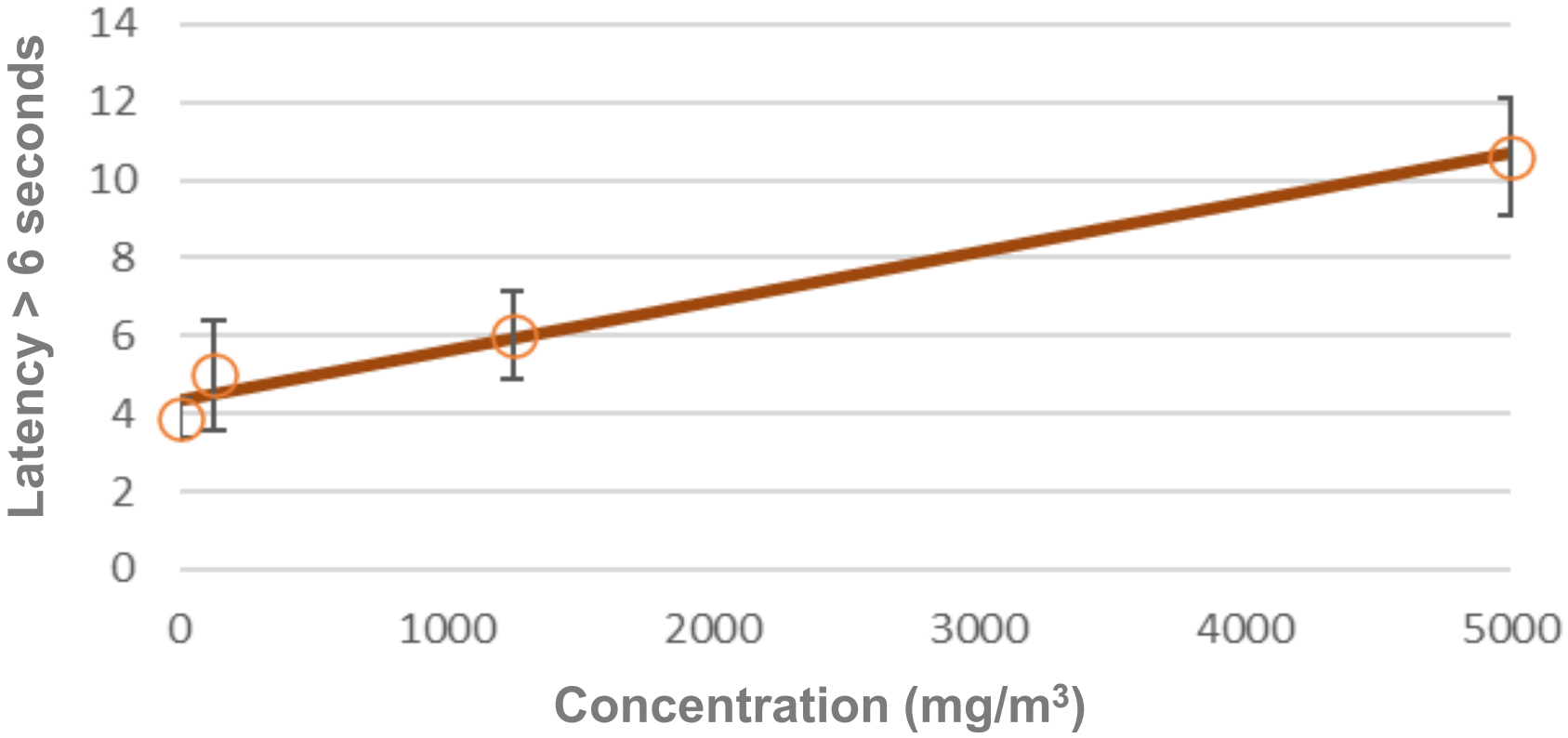
Treatment-Related Neurobehavioral Test Result in Rats Following a Single 8-hour Inhalation Exposure to 1,2,4-TMB (McKee et al., 2010)

Concentration mg/m^3 (ppm) *n* = 8/group	Latency> 6 seconds[a] (mean ± SD)
0	3.88 ± 0.58
125 (25)	5.00 ± 1.69
1250 (250)	6.00 ± 1.34
5000 (1000)	10.63 ± 1.80[b]

[a] = the number of responses taking more than 6 seconds
[b] = p <0.05

Acute REL derivation for TMBs
(drink response latency)

Polynomial Degree 2 Model (BMR_{1SD}) fit to the McKee et al. (2010)
1,2,4-Trimethylbenzene study for neurotoxicity in male rats



Acute REL Derivation for TMBs

- Acute REL intended to protect against infrequent 1-hour exposures
- Benchmark Concentration, 1 SD change from the control mean (BMC_{1SD}) = 970 mg/m^3
- Lower 95% confidence limit on the benchmark concentration, 1 SD change from the control mean ($BMCL_{1SD}$) = 709 mg/m^3
- 709 mg/m^3 = Point of Departure (POD)
- 8-hr exposure adjusted for a 1-hr exposure = 1417 mg/m^3 (288 ppm)
- HEC (Human Equivalent Concentration) adjustment was applied, which accounts for differences in the blood/air concentration in rats vs humans
- In this case, the RGDR (Regional Gas Dose Ratio) used to derive the HEC = 0.98 (rounded to 1) for systemic effects

Acute REL Derivation for TMBs

- Interspecies Uncertainty Factor (UF): 6
  - Toxicokinetic UF = 2, for residual toxicokinetic differences when using the HEC adjustment
  - Toxicodynamic UF = $\sqrt{10}$, for lack of toxicodynamic data on interspecies differences

Acute REL Derivation for TMBs

Intraspecies Uncertainty Factor (UF): 100

- Toxicokinetic UF = 10, due to no information on pharmacokinetic differences for TMBs among adults, infants and children
- Toxicodynamic UF = 10, because TMBs are neurotoxicants and children are potentially more sensitive than adults

Cumulative UF = 600

Acute TMB REL = 2400 µg/m^3 (490 ppb)

TMB Chronic/Subchronic Effects: Humans

- No human controlled chronic/subchronic studies or child-specific toxicity data were identified
- No occupational exposure studies with exposure uniquely to TMBs
- Occupational studies in workers exposed to paint thinners containing > 80% TMBs report CNS effects, including neuropsychological changes, memory deficits, reduced motor speed/coordination, as well as anemia and bronchitis
- In biomonitoring studies of factory workers exposed to solvents containing TMBs, vestibular disorders have been reported

TMB Chronic/Subchronic Effects in Experimental Animals

- No lifetime chronic animal studies were identified for any of the 3 TMB isomers
- Subchronic animal studies show largely respiratory and neurological effects (behavioral alterations)
- Subchronic inhalation studies in rodents also show organ effects (liver, kidneys), hematological (↑ WBC, ↓ RBC, etc), and clinical chemistry effects
- The most sensitive endpoint is neurotoxicity (sensorimotor impairment)

Chronic REL Derivation for the TMBs

- The Korsak and Rydzynski (1996) subchronic neurotoxic inhalation study in rats was used to develop the chronic and 8-hr TMB RELs (lowest POD)
- Concentration-dependent disturbances in pain sensitivity and motor behaviors were seen in male rats following a 6 hr/day, 5 day/week, 3 month exposure to 0, 25, 100, 250 ppm TMBs
  - Significant effects on pain sensitivity @ ≥ 25 ppm 1,2,3-TMB and ≥ 100 ppm 1,2,4-TMB
  - Significant effects on rotarod performance (measures neuromuscular function) @ ≥ 100 ppm 1,2,3-TMB and @ 250 ppm 1,2,4-TMB
- Separately, 1,3,5-TMB has also been found to result in behavioral disturbances (latency of reactions @ 100 ppm) in a related study by same authors

Chronic REL Derivation for TMBs

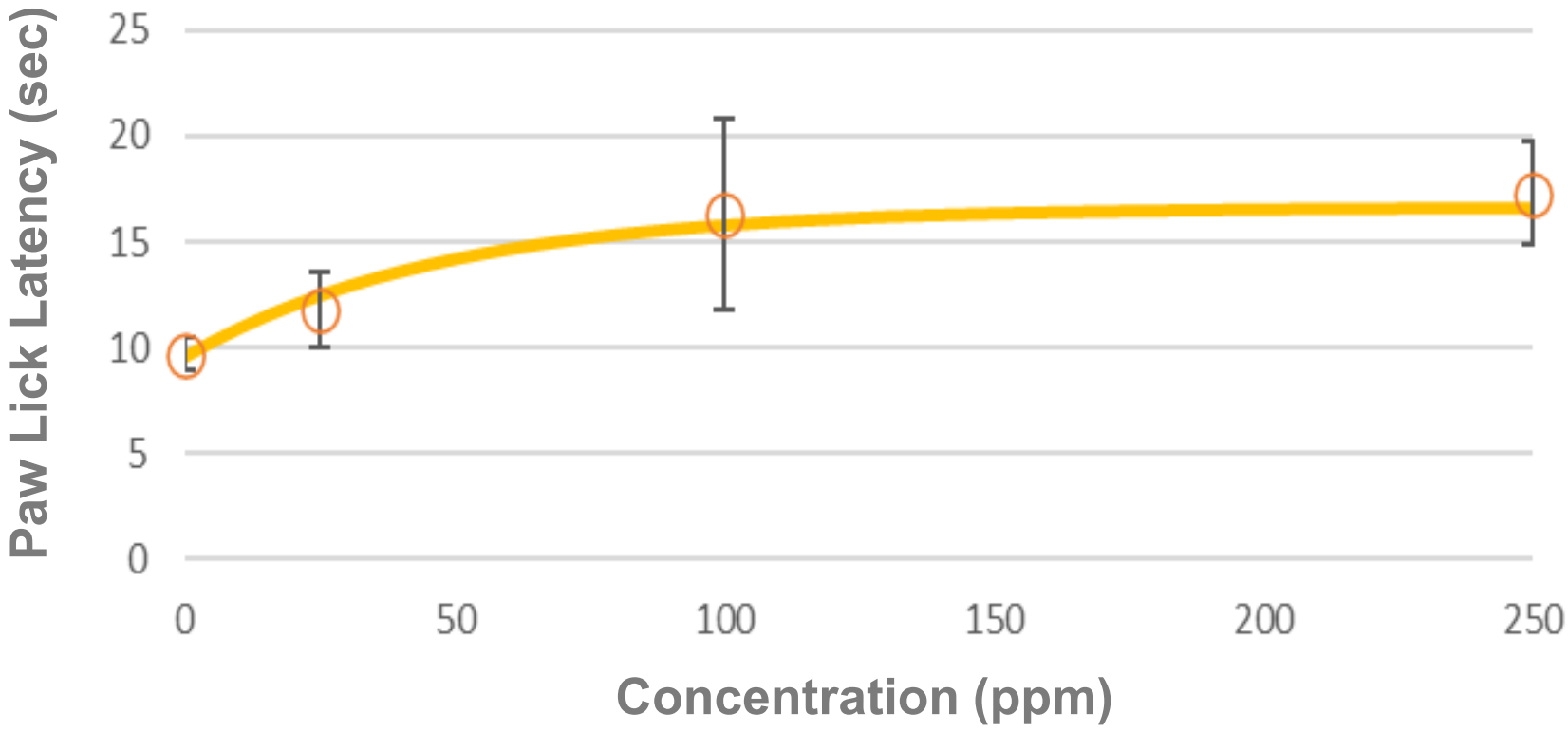
Pain Sensitivity (Latency of the Paw-Lick Response) Results from the Korsak and Rydzynski (1996) Neurotoxicity Study in Rats

TMB Isomer	No Animals/Response (seconds)	Exposure Concentration			
		Control	25 ppm (123 mg/m^3)	100 ppm (492 mg/m^3)	250 ppm (1230 mg/m^3)
1,2,4-TMB	# of Animals	9	10	9	10
	Paw-Lick	15.4 ± 5.8	18.2 ± 5.7	**27.6 ± 3.2***	30.1 ± 7.9*
1,2,3-TMB	# of animals	30	20	10	10
	Paw-Lick	9.7 ± 2.1	**11.8 ± 3.8***	16.3 ± 6.3*	17.3 ± 3.4*

Paw-lick latency values are expressed as mean ± SD
*Statistically significant (at $p < 0.05$ or $p < 0.01$)

Chronic REL Derivation for TMBs
(paw-lick latency)

Exponential 4 Model (BMR_{1SD}) fit to the 90-day 1,2,3-Trimethylbenzene Korsak and Rydzynski (1996) study for neurotoxicity in male rats



Chronic REL Derivation for TMBs

- The 1,2,3-TMB isomer yields the lowest Point of Departure (POD)
- Benchmark Concentration, 1 SD change from the control mean (BMC_{1SD}) = 86 mg/m^3 (18 ppm)
- Lower 95% confidence limit on the benchmark concentration, 1 SD change from the control mean ($BMCL_{1SD}$) = 47 mg/m^3 (10 ppm)
- 47 mg/m^3 = POD
  - The 6 hr/day, 5 day/week exposure adjusted for a continuous 24 hr exposure = $BMCL_{1SD}$ (adj) of 8 mg/m^3 (2 ppm) 1,2,3-TMB
  - Human Equivalent Concentration (HEC): RGDR = 0.98 for systemic effects

Chronic REL Derivation for TMBs

- Chronic REL intended to protect over lifetime, including sensitive subpopulations
- Subchronic UF = $\sqrt{10}$ (13 week study)
- Interspecies Uncertainty Factor (UF): 6
  - Toxicokinetic UF = 2, for residual toxicokinetic differences when using the HEC adjustment
  - Toxicodynamic UF = $\sqrt{10}$, for lack of toxicodynamic data on interspecies differences

Chronic REL Derivation for TMBs

Intraspecies Uncertainty Factor (UF): 100

- Toxicokinetic UF = 10, due to no information on pharmacokinetic differences for TMBs among adults, infants and children
- Toxicodynamic UF = 10, because TMBs are neurotoxicants and children are potentially more sensitive than adults

Cumulative UF = 2000

Chronic TMB REL = 4 µg/m^3 (1 ppb)

8-Hour REL Derivation for TMBs

- Based on same animal study by Korsak and Rydzynski (1996)
- Same POD = 47 mg/m^3 (10 ppm) 1,2,3-TMB
- Time adjustment is different:
  - Adjusted for 8-hr workday and to represent the breathing rate of workers
- All UFs are the same as the chronic REL

8-Hour TMB REL = 8 µg/m^3 (2 ppb)

Proposed TMB RELs: Summary

Acute: 2400 µg/m^3 (490 ppb)

Chronic: 4 µg/m^3 (1 ppb)

8-Hour: 8 µg/m^3 (2 ppb)

Public Comments

- **OEHHA did not receive any public comments on the draft TMB REL document**
- Public comment period: January 27, 2023 – March 13, 2023
- Public Workshops were held on February 23, 2023 in Southern California and on March 2, 2023 in Northern California

Update to the Inhalation Unit Risk (IUR) for Cobalt Sulfate Heptahydrate

OEHHA Air Toxics Hot Spots Program

Scientific Review Panel Presentation
June 16, 2023

Daryn Dodge

Staff Toxicologist

Air and Toxicology Risk Assessment Section

Office of Environmental Health Hazard Assessment

Update to the IUR for Cobalt Sulfate Heptahydrate

1. IUR updated in response to a correction made recently to the NTP report

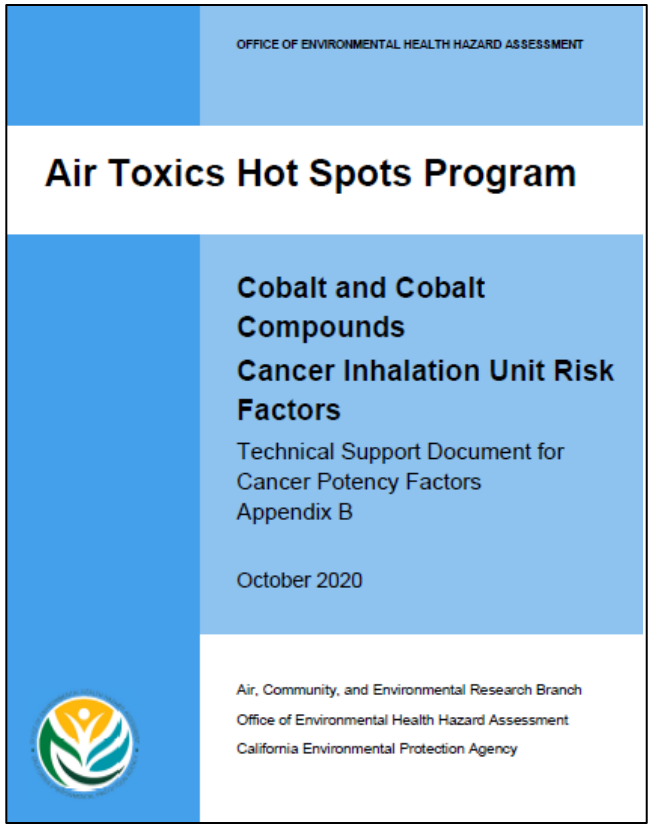
2. IUR corrected due to calculation error

Cobalt and Cobalt Compounds Cancer IUR Factors

- IUR document released in October 2020
  - Cobalt metal and poorly soluble compounds

    IUR = 7.7×10^{-3} per µg/m^3
  - Cobalt sulfate heptahydrate and water-soluble compounds

    IUR = 8.6×10^{-4} per µg/m^3



2022 Correction for NTP Technical Report 471

"In the originally published version of this manuscript, there is an error in the Materials and Methods section. The aerosolized particles are correctly identified and characterized as cobalt sulfate hexahydrate, however, the following statement "thus the concentrations reported are of cobalt sulfate hexahydrate rather than to the anhydrous salt" is incorrect. The inhalation exposure concentrations that appear in the text, tables and figures are all correctly expressed as mg/m3 of (anhydrous) cobalt sulfate rather than as cobalt sulfate hexahydrate. The authors regret the error.

"These details have been corrected only in this correction notice to preserve the published version of record."

Toxicological Sciences 188(2): 276, Aug 2022, https://doi.org/10.1093/toxsci/kfac063,

Published 20 June 2022.

Cobalt Sulfate Exposures

- An aqueous solution of cobalt sulfate heptahydrate was aerosolized for the exposures
- In the chambers, the rodents were exposed primarily to the hexahydrate form
- Exposure concentrations of 0.3, 1.0 and 3.0 mg/m^3 are expressed as the cobalt sulfate anhydrous salt, and not as the heptahydrate as stated in the NTP report.

Correction for the MW Fraction of Cobalt

- Because the cobalt ion is considered to be the primary factor for cancer risk, the calculated Cancer Slope Factor was normalized to the content of cobalt in the 2020 IUR document:

  58.9 Co / 263.1 $CoSO_4 \times 6H_2O$ = 0.22

- Because exposure concentration were expressed as the anhydrous salt, actual Co MW fraction should be:

  58.9 Co / 155.0 $CoSO_4$ = 0.38

- Cancer potency will change by 1.7x (0.38 / 0.22)

Calculation Correction

- A calculation error made by OEHHA was also found
- In the final calculation of the CSF, the cobalt-normalized CSF was corrected to show that the MW fraction of cobalt in cobalt sulfate is divided into, rather than multiplied by, the CSF:

CSF = 13.41 per mg/kg-day / 0.38 = 35 per mg Co/kg-day (cobalt-normalized CSF)

(Previous erroneous CSF was 3.0 per mg Co/kg-day)

IUR Calculation

- Inhalation unit risk:

$$IUR = (35\ (mg\ Co/kg\text{-}day)^{-1} \times 20\ m^3/d) / (70\ kg \times 1000\ \mu g/mg)$$

$$= 1.0 \times 10^{-2}\ per\ \mu g/m^3$$

- The same CSF of 35 (mg Co/kg-day)$^{-1}$ was also calculated when starting with normalized cobalt concentrations of 0.114, 0.38, and 1.14 mg Co/m^3
  - converted from original concentrations of 0.3, 1.0 and 3.0 mg/m^3

Summary of Changes to Cobalt Sulfate Heptahydrate

- Describes where the Cobalt and Cobalt Compounds IUR document was updated to reflect the corrections
- Footnotes added to note that cobalt sulfate concentrations are expressed as the anhydrous salt
- Added same statement to table legends for tumor incidence
- Modified final calculations in the text to show the corrected CSF and IUR

Public Comments

- **OEHHA did not receive any public comments on the draft Cobalt IUR document**
- Public Comment Period: May 5 – June 5, 2023
- Public Workshops were held in:
  - Diamond Bar, CA on May 23, 2023
  - Sacramento, CA on May 31, 2023 (webcast)

Questions?

Informational Item: Expedited Development of Health Guidance Values

Office of Environmental Health Hazard Assessment

Presentation to the Scientific Review Panel on Toxic Air Contaminants

June 16, 2023

OEHHA

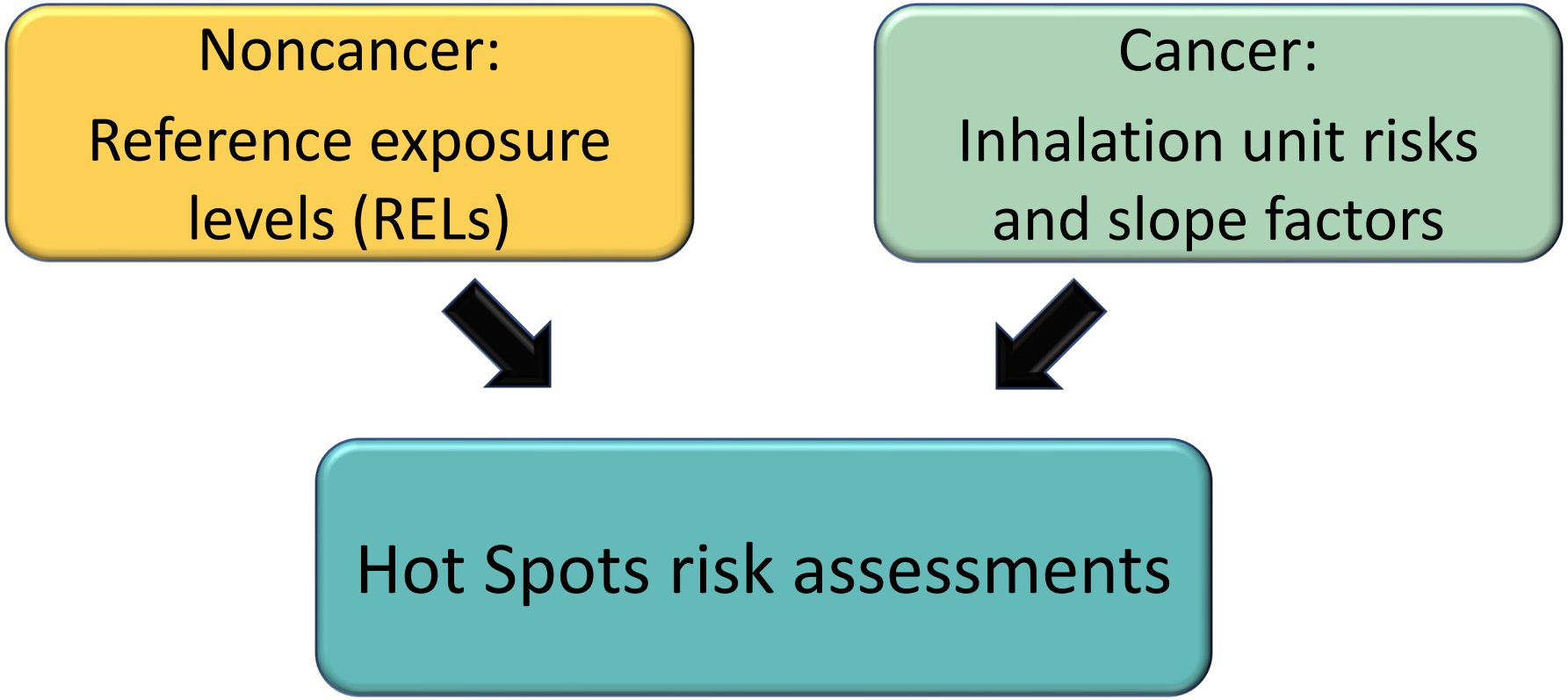
SCIENCE FOR A HEALTHY CALIFORNIA

Background on Hot Spots

AB 2588 Air Toxics "Hot Spots" Emission Inventory Criteria and Guidelines Regulation (EICG) (1987)

- Requires stationary sources to report types and quantities of certain substances routinely released into the air
- Goals:
  - Collect emission data
  - Identify facilities having localized impacts
  - Ascertain health risks
  - Notify nearby residents of significant risks
  - Reduce significant risks to acceptable levels
- ~1500 compounds

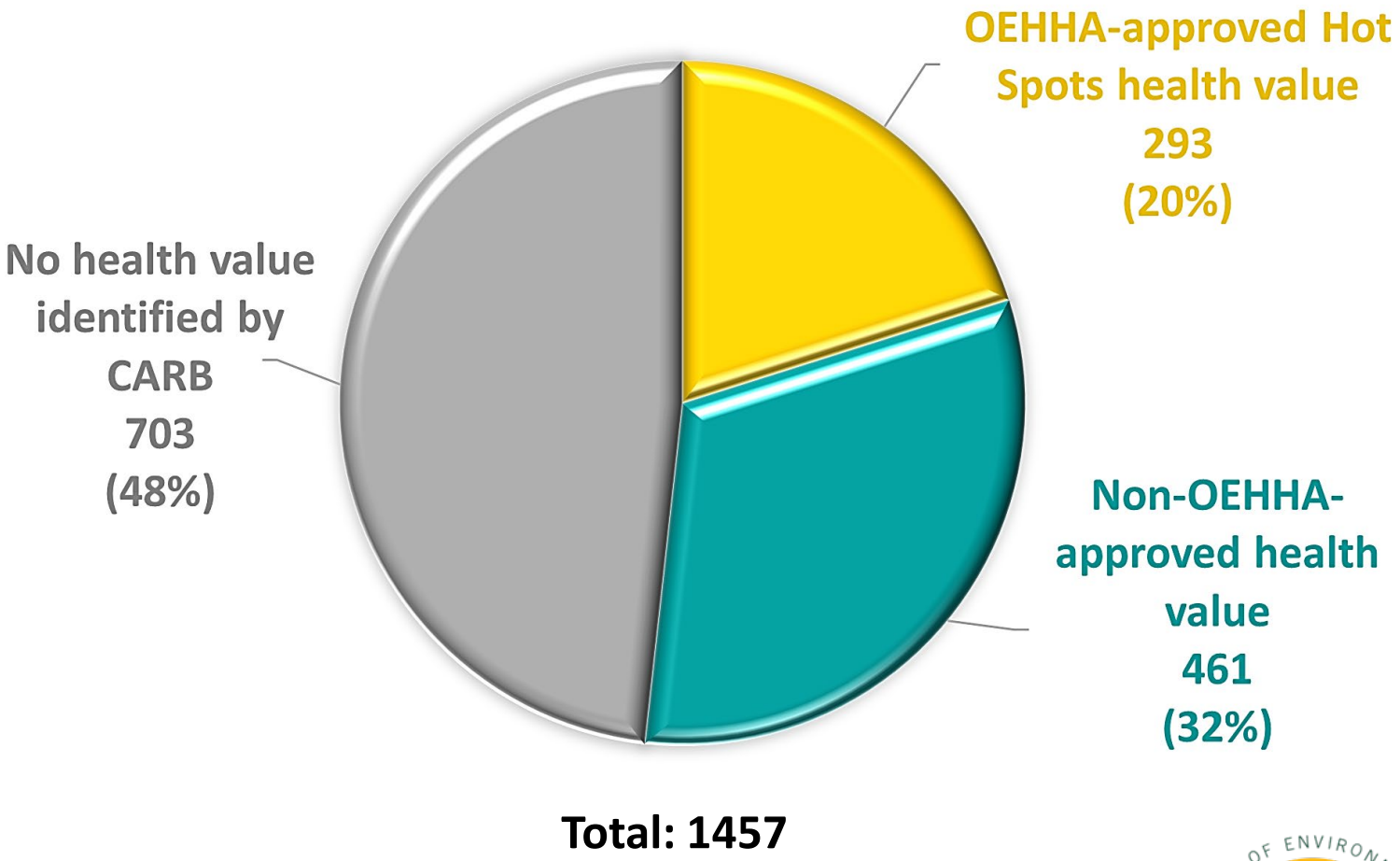
OEHHA develops health guidance values for Hot Spots



Hot Spots assessments require significant time and resources

- Comprehensive evaluation of the scientific literature and internal evaluation process for each compound are time-consuming
- Draft assessments are submitted for public and SRP reviews at the rate of 1-3 compounds/year

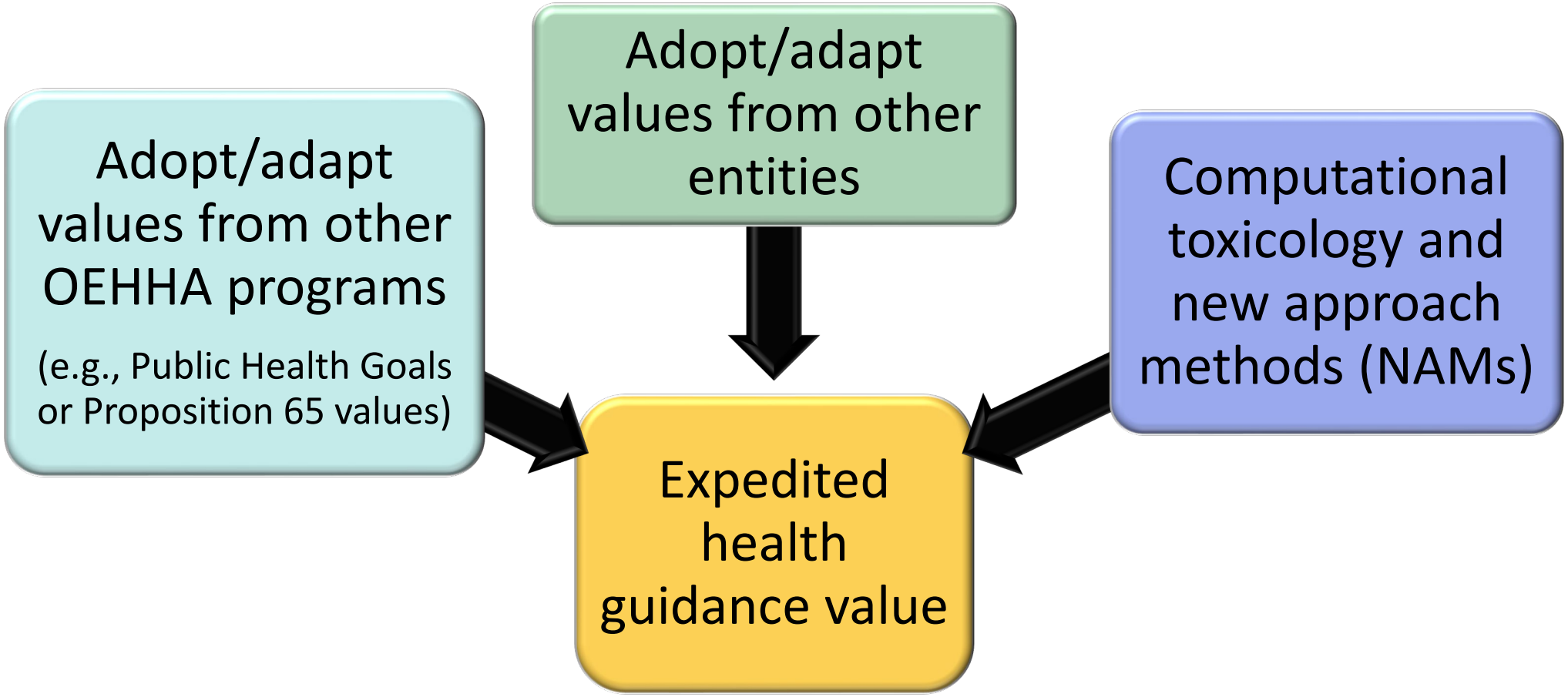
Many Hot Spots compounds do not have OEHHA-derived Hot Spots values



Examples of types of compounds without OEHHA-derived Hot Spots health values

- Antimicrobials
- Bisphenols
- Dialkylnitrosamines
- Flame retardants
- Glycol ethers and their acetates
- Hetero-substituted benzenes (e.g., phenols)
- Isocyanates
- Several metals
- Mineral fibers
- Many PAHs
- Parabens
- Many pesticides
- PFAS
- Phthalates
- Many polychlorinated dibenzofurans
- Many polychlorinated dibenzo-p-dioxins

Potential for expedited development of health values



OEHHA used this approach to produce values for the CARB-led Study of Neighborhood Air near Petroleum Sources (SNAPS)

Adoption of other OEHHA health guidance values

Public Health Goals (PHGs)

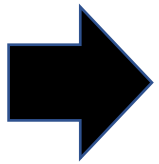
- Drinking water concentrations
- *Basis* of PHG could be adopted, not the PHG itself
  - Noncancer: Point of departure divided by uncertainty factors
  - Cancer: Potency

Proposition 65 values

- Noncancer: Maximum Allowable Dose Level (MADL) for reproductive or developmental toxicity
  - 1,000 times MADL expected to have no observable effect
- Cancer: No Significant Risk Level (NSRL)
  - Dose associated with a 10^{-5} cancer risk
- *Basis* of value would be adopted
  - MADL: Point of departure divided by uncertainty factors
  - NSRL: Potency

Route-to-route extrapolation considerations for values based on oral studies

- Critical endpoints that can be unique to oral exposure; for example:
  - Endpoints related to interference with nutrient absorption (e.g., anemia, bone)
  - Endpoints at portal of entry (e.g., stomach irritation)
- Endpoints by the inhalation route that may be more sensitive or overlooked by using a value from an oral study; for example:
  - Respiratory, eye, membrane irritation
  - Respiratory sensitization
  - Lung/nasal tumors



Adopt most scientifically justifiable health guidance value

Potential process for adoption in Hot Spots program of recent values from other OEHHA programs

Begin literature search where previous assessment's literature search ended

↓

Identify studies suitable for quantitative dose-response analysis

↓

High-quality study that is more sensitive or appropriate?

NO ↓

Adopt/adapt OEHHA value

Potential candidates for adoption

- Cancer values from Proposition 65 program - Examples
  - Bromoethane (ethyl bromide)
  - Trichloroethylene (more recent than Hot Spots value)
  - Vinylidene chloride

Next steps

- Develop expedited numbers
  - Initial focus on carcinogens with recent Public Health Goal or Proposition 65 value
- Release expedited numbers for public comment
- Bring expedited values to SRP for review

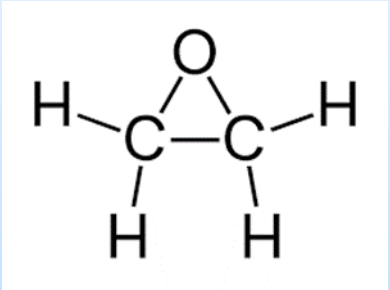
The future

- Previously assessed compounds
  - Identify additional sources of health values from federal and other agencies
- Unassessed compounds
  - Use NAMS in derivation of regulatory health guidance values by OEHHA's New Toxicology Evaluations Section

Any comments on what we've presented today?

Informational Item

Recent Release of Draft Updated Cancer Inhalation Unit Risk Factor for Ethylene Oxide



Office of Environmental Health Hazard Assessment

Presentation to the

Scientific Review Panel on Toxic Air Contaminants

June 16, 2023

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Ethylene oxide (EtO) Introduction

- **Uses**
  - Chemical intermediate in producing other chemicals
  - Sterilizer for medical and laboratory equipment/supplies
  - Fumigant for agricultural products (e.g., herbs and spices)
- **Carcinogenicity Classifications**
  - **California Proposition 65:** known to cause cancer
  - **United States Environmental Protection Agency:** carcinogenic to humans
  - **International Agency for Research on Cancer:** Group 1 carcinogen (carcinogenic to humans)
  - **National Toxicology Program:** known to be a human carcinogen
  - **OEHHA:** agrees with these conclusions regarding EtO carcinogenicity

EtO - Cancer Inhalation Unit Risk Factor (IUR)

- **OEHHA:** IUR developed initially in 1987 when OEHHA was part of the California Department of Health Services

- **New Data**: New relevant human epidemiological studies have become available since 1987

- **United States Environmental Protection Agency**: Updated its IUR for ETO in 2016 after a comprehensive evaluation of its carcinogenicity

Follow up on OEHHA presentation to SRP on May 12, 2022

- Leverage work from other health agencies
- Build upon authoritative review conducted by other agencies (following evaluation)
- Combine the effort with other OEHHA initiatives

- **Starting point:**
  - U.S. EPA (2016) assessment – full descriptions of studies published since TAC IUR development (1987)
- **OEHHA Effort:**
  - Focused on literature search since 2016 EPA assessment
  - Evaluated the dose-response model selection

Recent OEHHA actions on EtO

- **On 4/7/2023, OEHHA released draft guidance values:**
  - **A draft updated Air Hot Spots Cancer IUR for EtO**
  - **A proposed updated Proposition 65 No Significant Risk Level (NSRL) for EtO**

- **Both IUR and NSRL values are:**
  - **Based on the cancer potency from US EPA's exposure-response modeling**
  - **Calculated from occupational epidemiological studies by Steenland et al. (2003; 2004)**

What does OEHHA's draft IUR value say about EtO?

- More recent human data, as reviewed by US EPA and OEHHA, indicate that EtO is a more potent carcinogen than indicated by earlier animal data
- Draft IUR – The updated draft IUR cancer potency of EtO, based on the human data, is about 38 times greater compared to the current IUR derived in 1987 based on animal data

Draft Updated EtO IUR
Public review Draft

- **Endogenous EtO production:**
  - Cytochrome P450-mediated conversion of ethylene
  - Contributes to adduct levels, such as N-2-hydroxyethylvaline in humans and other species
- **EtO genotoxicity:**
  - Extensively reviewed by many agencies
  - 3 additional studies since US EPA review in 2016
  - Consistent with the overall evidence
- **Exposure-Response:**
  - OEHHA's update of EtO IUR is based on US EPA's 2016 analysis of the exposure-response relationship

Draft Updated EtO IUR
Public review Draft

- OEHHA evaluated several other exposure-response models and none of the models resulted in a better fit than the model selected by US EPA
- No new scientific information necessitating a change to the US EPA's IUR
- OEHHA concluded that US EPA's exposure-response model is the most appropriate model for estimating the lower-exposure lymphoid and breast cancer risks of EtO

Draft Updated EtO IUR
Public review Draft

- **Adult-exposure-based EtO Cancer IUR:**
  - **3.3×10^{-3} per µg/m^3 (6.1×10^{-3} per ppb)**
  - **Combining lymphoid cancer in males and females and breast cancer in females**
- **The IUR describes the excess cancer risk (i.e., risk over and above background risk) associated with inhalation exposure to an EtO concentration of 1 µg/m^3**
- **The background risk includes cancer risk due to endogenous EtO exposures**

Public Comment Solicitation on Draft Updated IUR for EtO

- Public comment period April 7 – June 14
- Workshops
  - Northern California (5 May)
    - 1 commenter
  - Southern California (16 May)
    - 2 commenters
- Written comments
  - Closed June 14
  - 4 written comments by email
  - 11 written comments via website

Next Steps

- Review public comments
- Develop response to comments and make appropriate changes to draft document
- Bring the revised draft to SRP for review

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CALIFORNIA
AIR RESOURCES BOARD

Community Air Protection Program Update

Scientific Review Panel Meeting
June 16, 2023

Outline

- Annual Program Update
- Statewide Strategy Revision Process: “Blueprint 2.0”
- Questions?

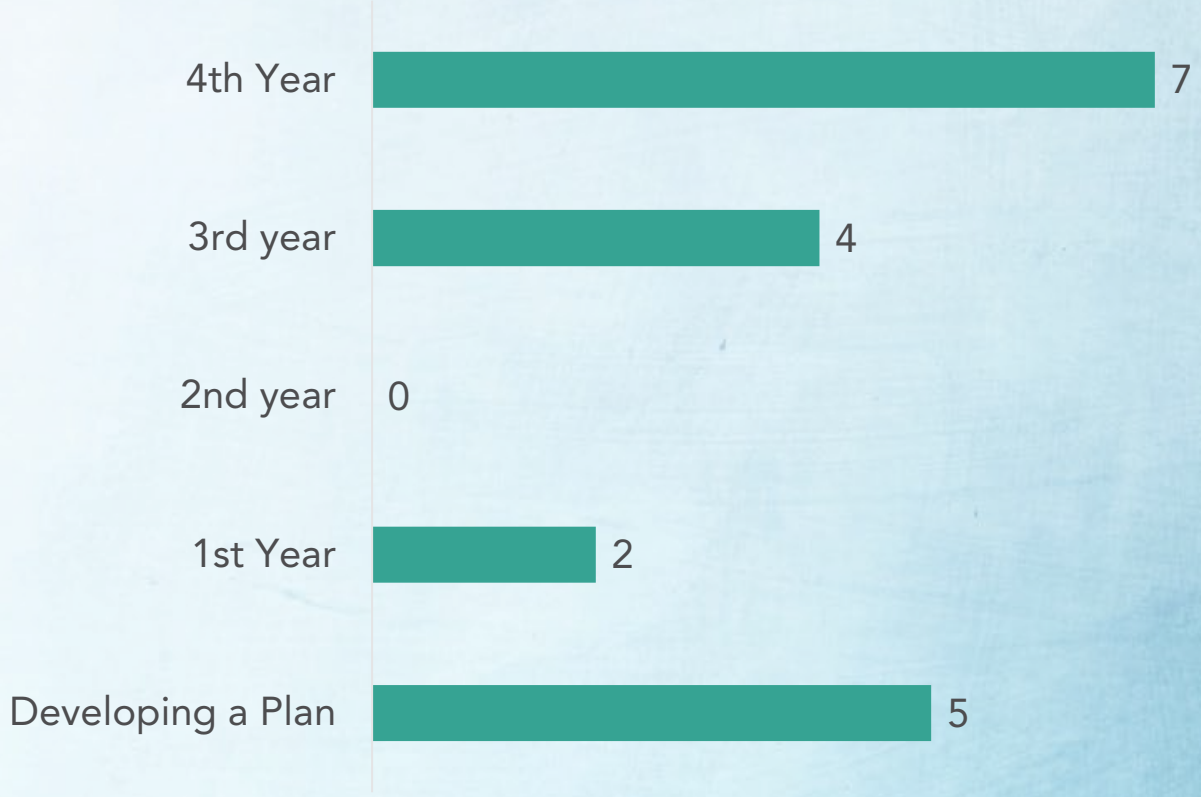
CARB

Status of Communities

Community Snapshot

- 19 communities
- 18 developing CERPs
- 1 CAMP-only community
- Locations
  - 1 in Sacramento
  - 4 Bay Area
  - 4 Central Valley
  - 6 Greater Los Angeles/Riverside
  - 2 San Diego
  - 2 Imperial County

CERP Implementation Year



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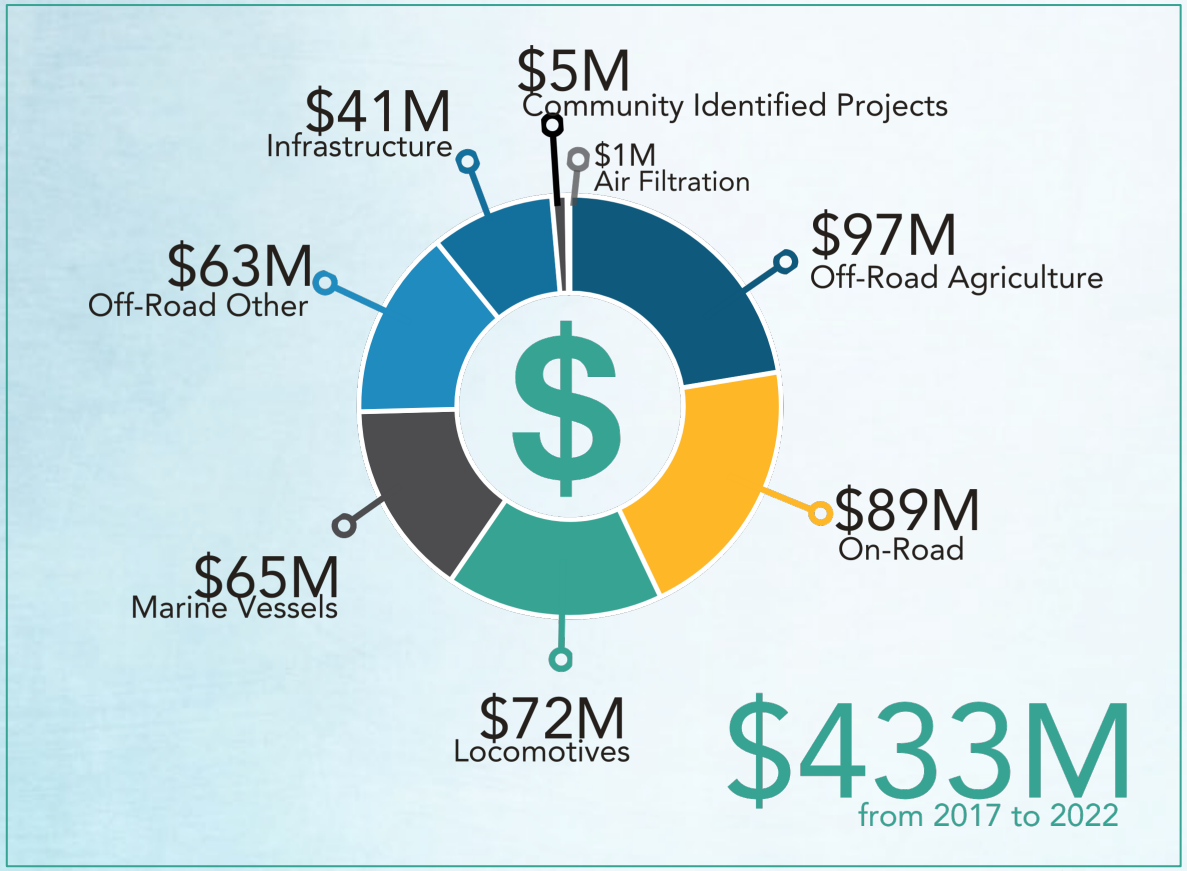
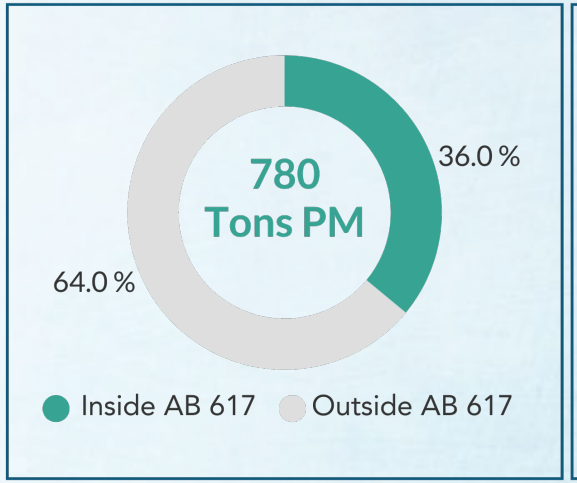
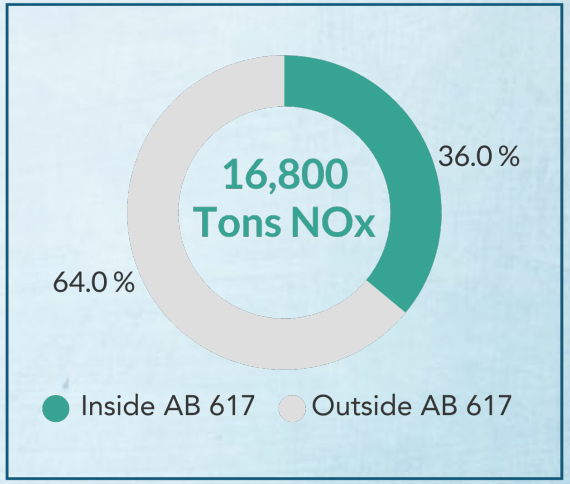
How are Communities Using Incentives?

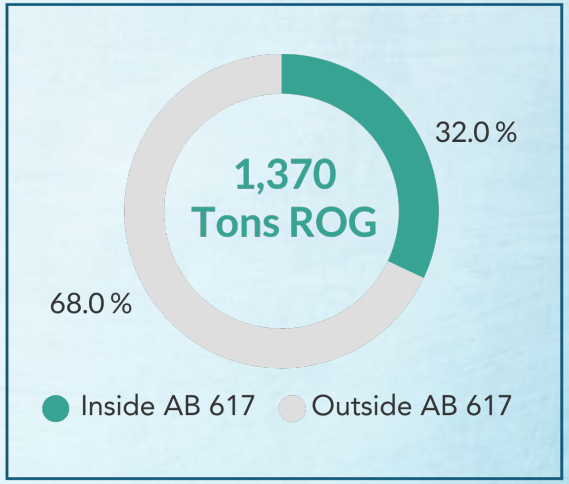
$172 million (40%) has been invested in communities selected for the AB 617 Program (as of Nov 2022).



Estimated Statewide Emissions Reduction







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Exposure Reduction Projects

- HD truck rerouting
- Vegetative barriers
- Residential air filtration
- School air filtration
- School notification systems
- Paving projects

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Statewide Strategy Revision Process: "Blueprint 2.0"

AB 617 (2017)

AB 197 (2016)

AB 1749 (2022)

Program Statutes

Statewide Strategy Implementation Guidance

Sept 2018

Sept 2023

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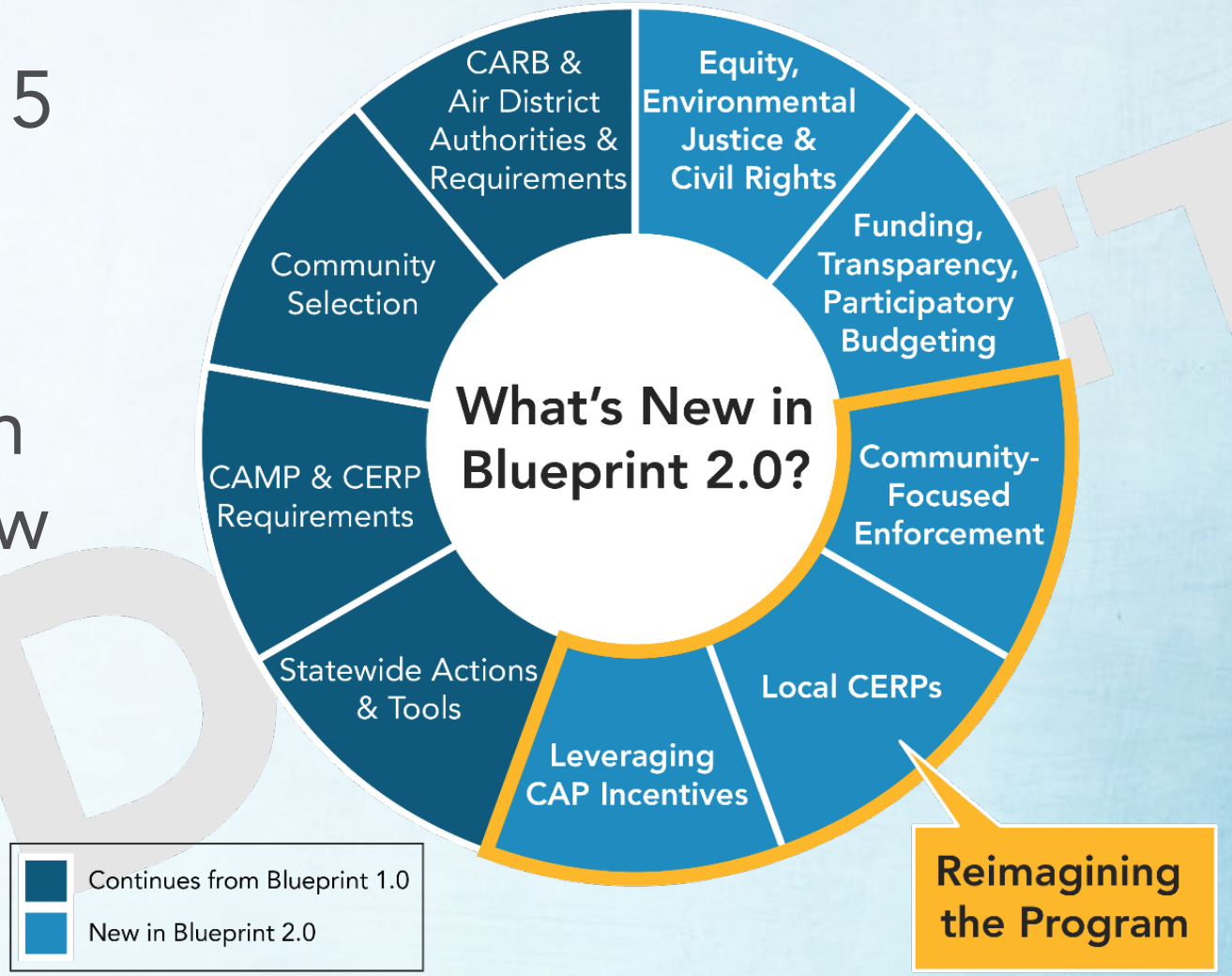
Reimagining the Program

Update required every 5 years (Sept 2023)

Reimagine the Program *together* to identify new ways to support more communities



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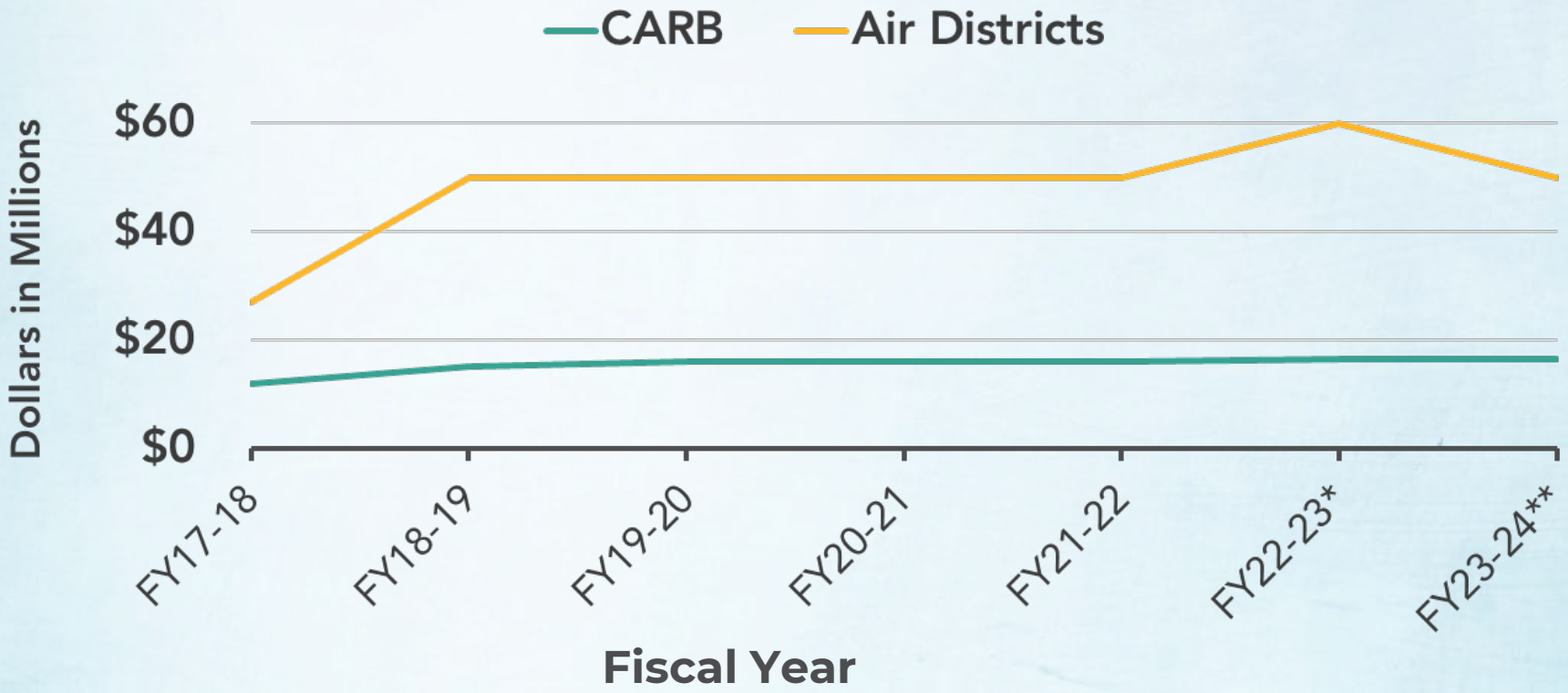
AB 617 Implementation Funds, Millions

FY 2017-2018 through FY 2022-2023



** Includes one time allocation of $10 Million for CERP development from AB 179*

*** Anticipated funding amount from May 2023 release*

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2023 Statewide Strategy

- Recommits CARB and air districts to the requirements contained in AB 617
- Affirms existing authorities to ensure non-discrimination
- Provides key actions to bring benefits to more communities through additional, less resource-intensive pathways

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Draft BP 2.0 Structure

Part One

5-Year Strategic Plan

- Vision
- Mission
- Guiding Principles
- Actions

Part Two – Implementation Guidance

Air District-Convened CSCs

- Improve process for CERPs and CAMPs in 19 CSCs
- Significantly informed by People's Blueprint

Community-Convened CSCs

- Local CERPs via Community Air Grants
- More flexibility to tap Community Air Protection Incentives
- Community-Focused Enforcement
- Target 65 consistently nominated communities

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Air District-Convened CAMPs/CERPs across 19 communities

Goal 4 – Ensure Completion of CERPs

- 19 communities developing or implementing CAMPs and/or CERPs
- Updated implementation guidance informed by People's Blueprint, Air Districts, Consultation Group, and lessons learned

New Pathways across 65+ communities

Goal 5 – Focus on Consistently Nominated Communities

Goal 6 – Use Community Air Grants to Build Community Capacity and Local CERPs

- 65+ communities seeking to tap into the Program
- Guidance on new pathways to bring Program benefits to these communities

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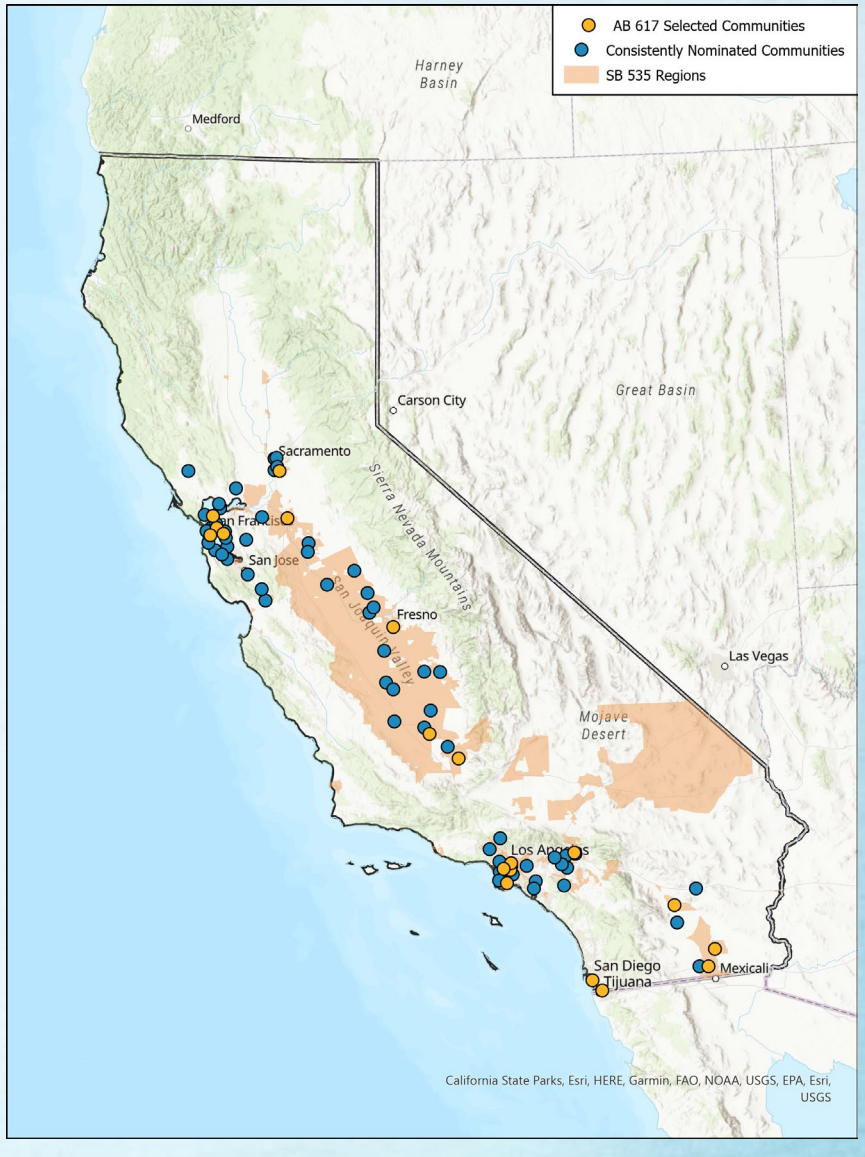
Consistently Nominated Communities

Over the next 5 years, we will focus resources in the 65 consistently nominated places.

- Engagement
- Outreach about CAGs
- Community-focused Enforcement
- Partnering with other agencies



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Blueprint 2.0 Development Timeline

Spring 2023 through September 2023

June 2023

- Release of Blueprint 2.0 Draft
- Opening of public comment period.

July 2023

- Outreach and Workshops
- Public comment docket closes July 31st

Aug 2023

- Release of Final Draft for comment in late August
- Public docket will open

Sept 2023

- CARB Board Meeting to consider Blueprint 2.0
- Public comment period at Board Meeting

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Questions?

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