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Title: PCBS IN RIO GRANDE WATERSHED

Author(s): Ken Mullen
Ralph Ford-Schmid

Submitted to: Bosque Hydrology Group "Middle Rio Grande Water Quality Summit"



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Form 836 (8/00)



PCBs in Rio Grande Watershed

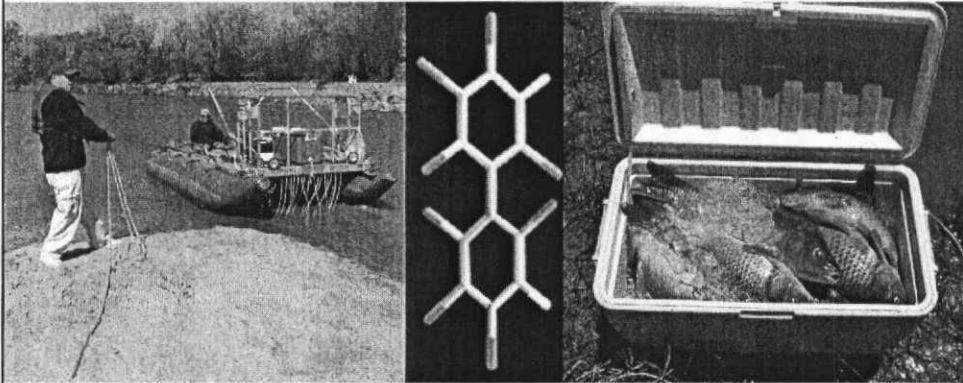
2000-2003 Surface Water and Sediment Sampling
A Cooperative Study

Ralph Ford-Schmid NMED

Ken Mullen LANL

October 2004

PCBs



Concentrations in fish from Cochiti Reservoir and Rio Grande could warrant fish consumption advisories based on EPA guidance

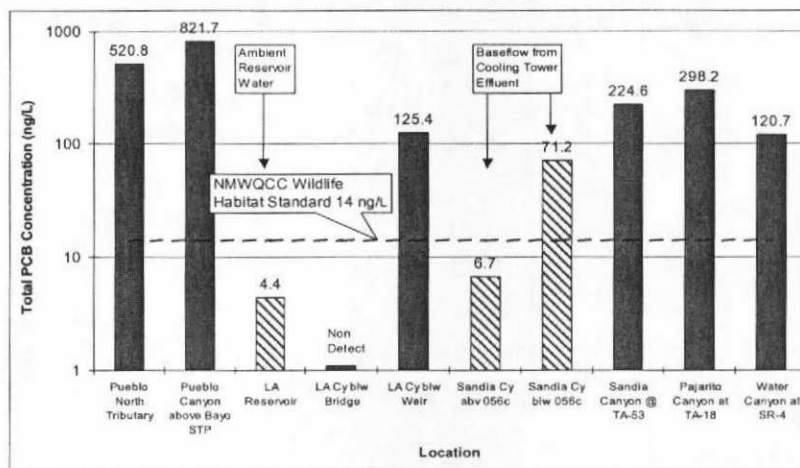
Standards and Analytical Methods

- NMWQCC Standards
 - 1.7 ng/L Human Health Standard
 - 14 ng/L Wildlife Standard
 - 500 ng/L EPA MCL for drinking water

- Analytical Methods
 - Aroclor Method 608
 - 8 Aroclors
 - Detection limit -100 ng/L
 - Congener Method 1668
 - 209 Congeners
 - Detection limit - pg/L

NMED Total PCB Concentration in Surface Water 2000 - 2001

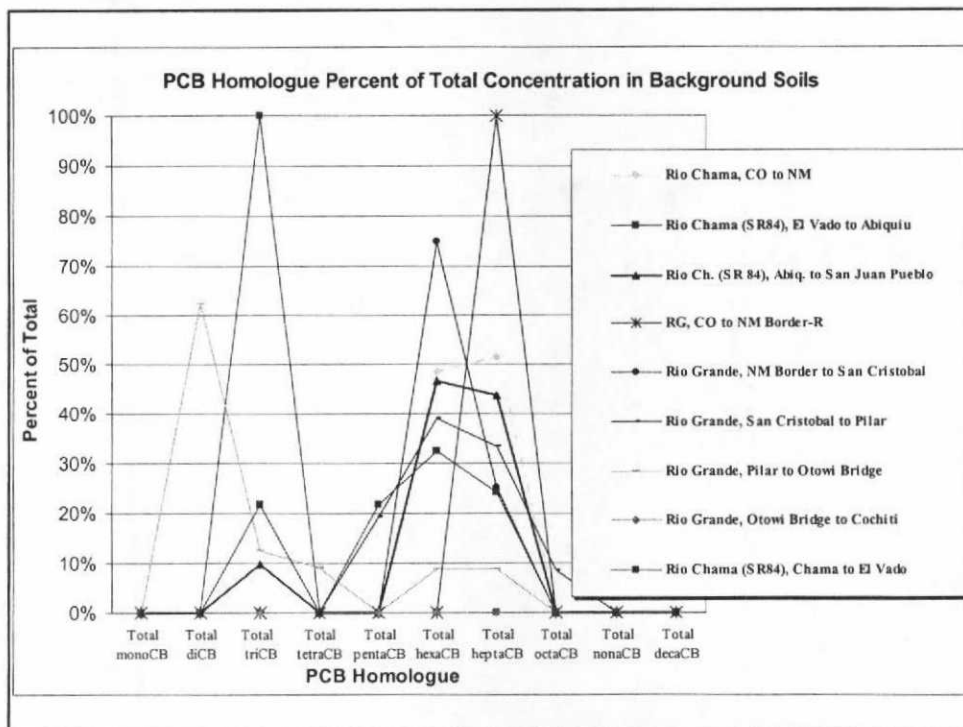
Source: NMED, February 26, 2003



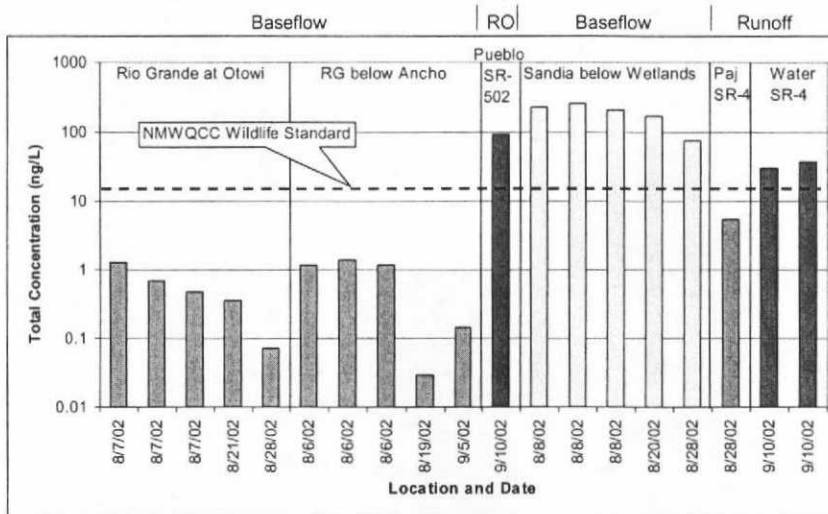
Note: Runoff solid bars, baseflow striped bars

PCB Cooperative Study

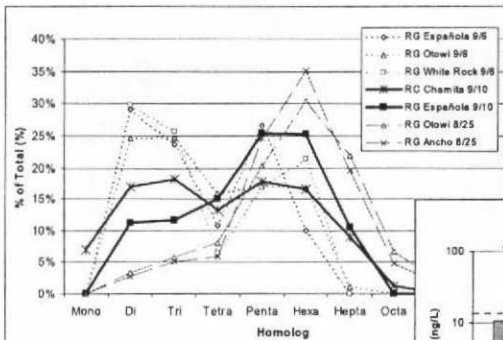
- Participants:
 - Los Alamos County
 - Santa Fe City and County
 - City of Albuquerque
 - LANL
 - Water Quality and Hydrology
 - Ecology
 - Legal
 - DOE
 - San Ildefonso Pueblo
 - Cochiti Pueblo
 - NMED Oversight and Surface Water Quality Bureaus



2002 Surface Water PCB Results Total Concentration in Baseflow and Runoff

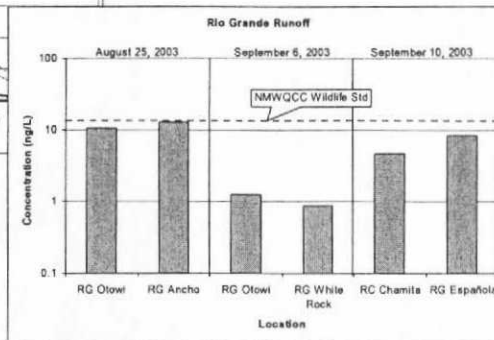


Rio Grande Runoff Events Sample Results

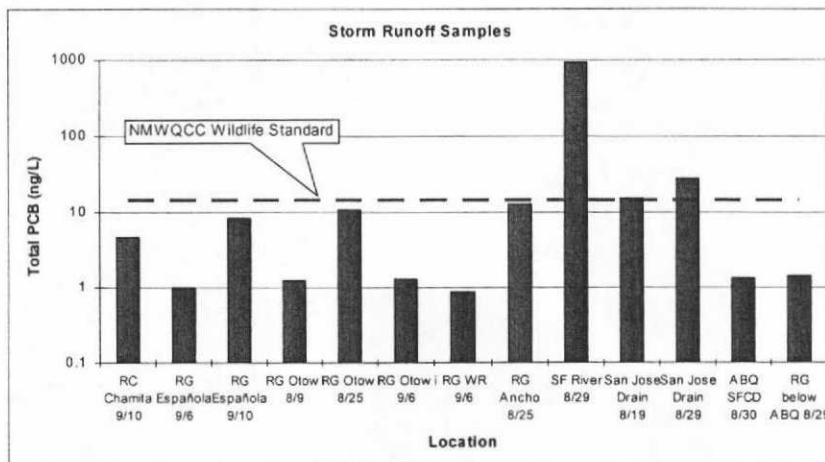


Runoff collected from RG Ancho on 8/25/03 has slightly higher total than at Otowi. Runoff from RG Espanola 9/10/03 has higher PCB concentration than upstream in Rio Chama

Runoff from Rio Grande on different dates have different homolog signatures. Runoff on 8/25/03 has weathered Aroclor 1260 signature, but appears to be coming from upstream of Otowi

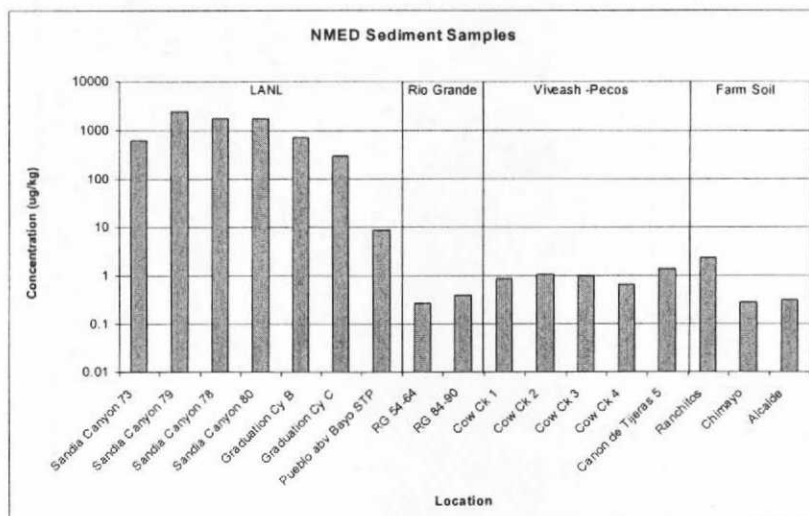


Regional Runoff Total PCB Results

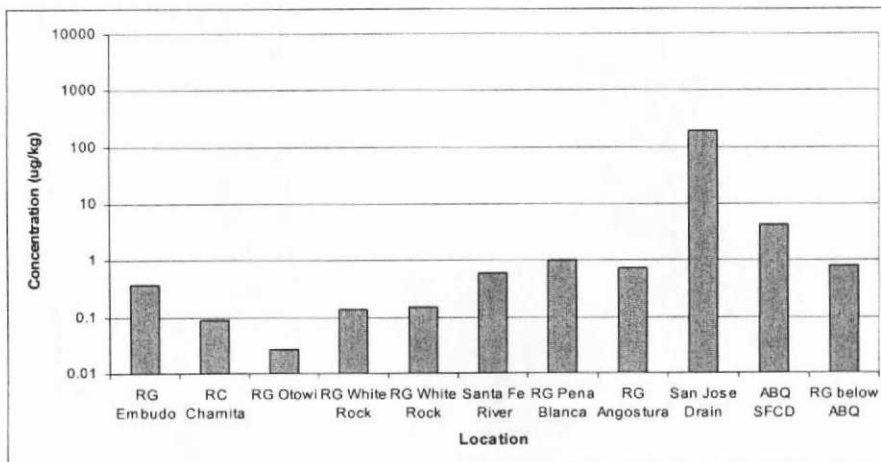


Highest total PCB concentration in regional runoff samples was 925 ng/L from Santa Fe River above STP. Two samples from the San Jose Drain in ABQ were above the NMWQCC Wildlife Standard of 14 ng/L. Other runoff samples were below the standard.

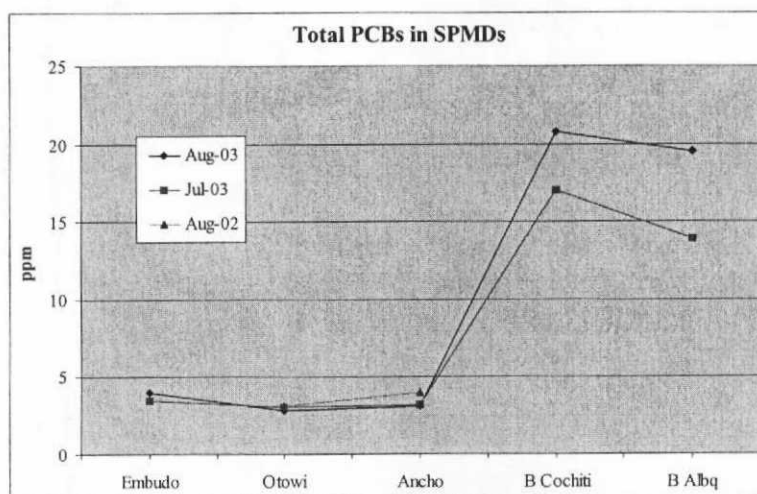
NMED PCB Results in Sediments



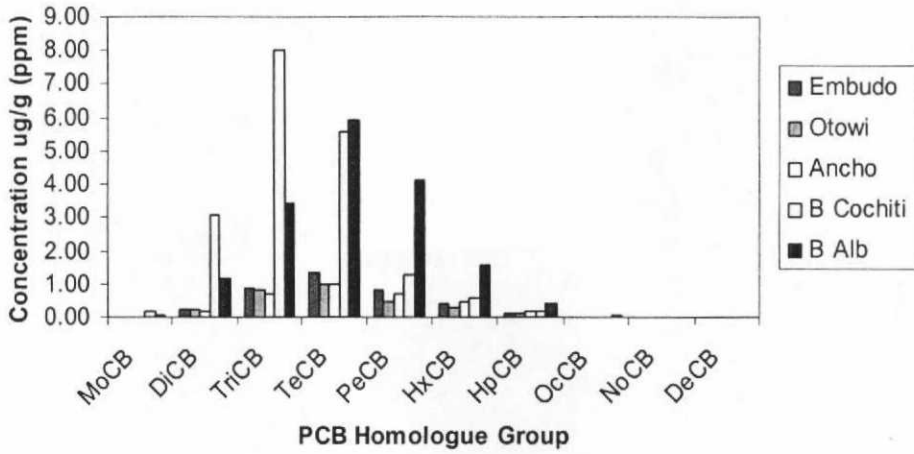
Regional PCB Results in Sediment



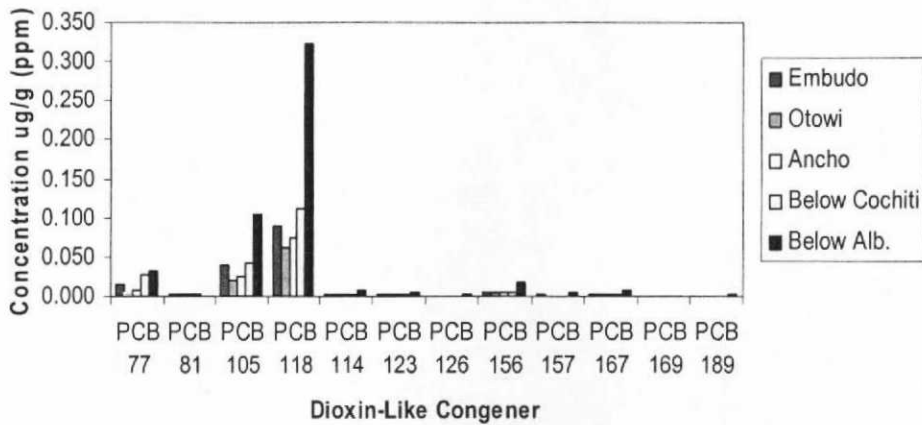
SPMD Results



PCB Homologue Distribution in SPMDs Along the Rio Grande



SPMD Dioxin-Like Congener Concentrations Along The Rio Grande



Key findings:

- 1) There are low levels of PCBs in the upper Rio Grande watershed soils, likely due to atmospheric deposition
- 2) Levels of PCBs in fish warrant consumption advisories
- 3) Levels of PCBs in storm runoff in tributaries to the Rio Grande often exceed the wildlife habitat standard
- 4) Levels of PCBs in the Rio Grande do not exceed the Wildlife Habitat standard but often exceed the Human Health standard
- 5) Levels of PCBs in the Rio Grande do not exceed the EPA drinking water standard for PCBs
- 6) Levels of dissolved PCBs in the Rio Grande (based on fat bag data) increase below Cochiti Reservoir and remain elevated through Albuquerque
- 7) The levels of toxic congeners (based on fat bag data) increase from Cochiti Reservoir through Albuquerque