

US EPA ARCHIVE DOCUMENT

Carcinogenicity of PAH in Sediment to Benthic Fish

- **Field Studies**
- **Laboratory Studies**
- **Black River Case History**
 - **With Coke Plant Operating**
 - **After Coke Plant Closure**
 - **Post Dredging**
 - **After Recovery**

Location of Tumor Epizootics in Fish



Bowfin

Brown Bullhead

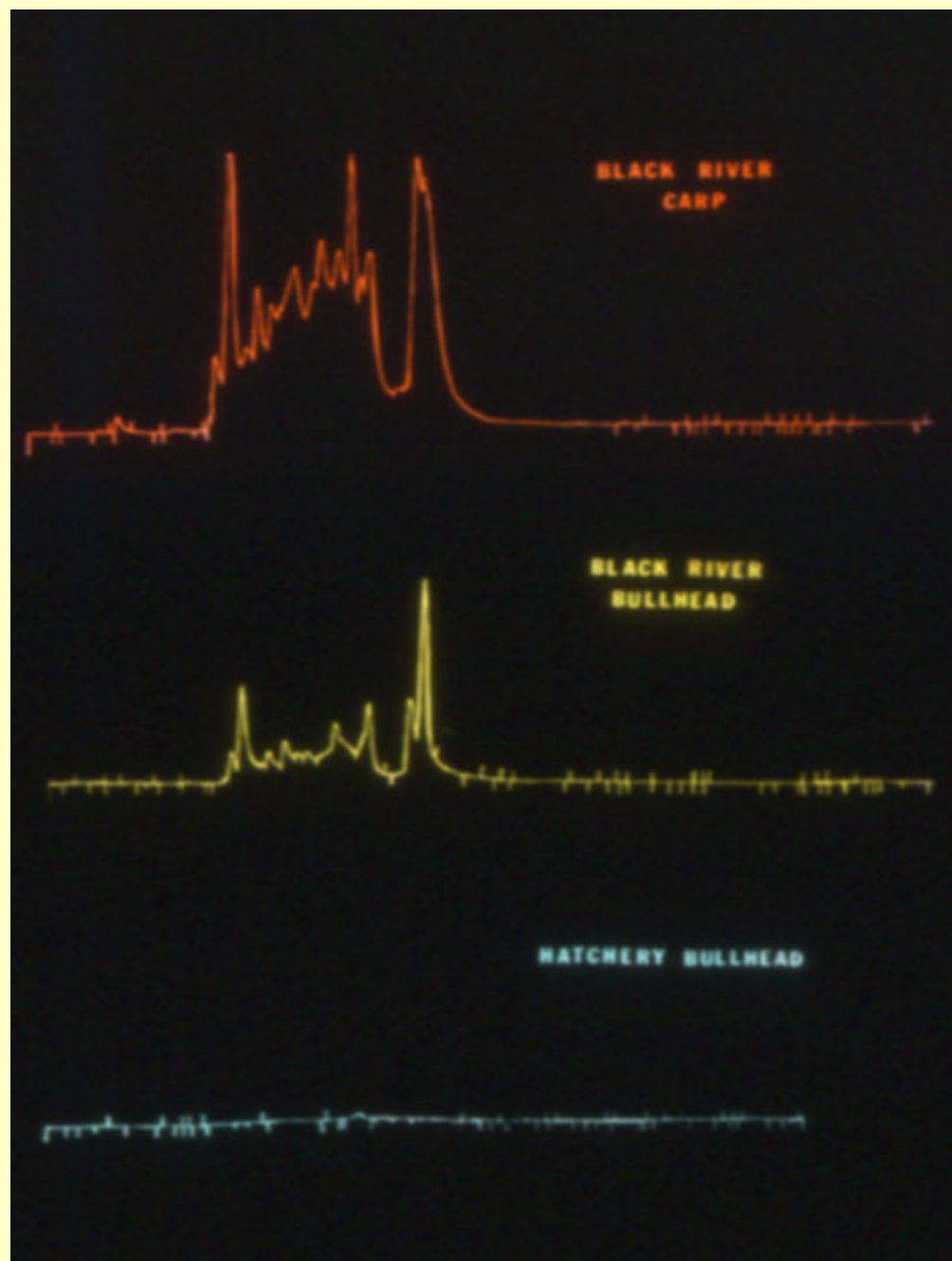
English sole

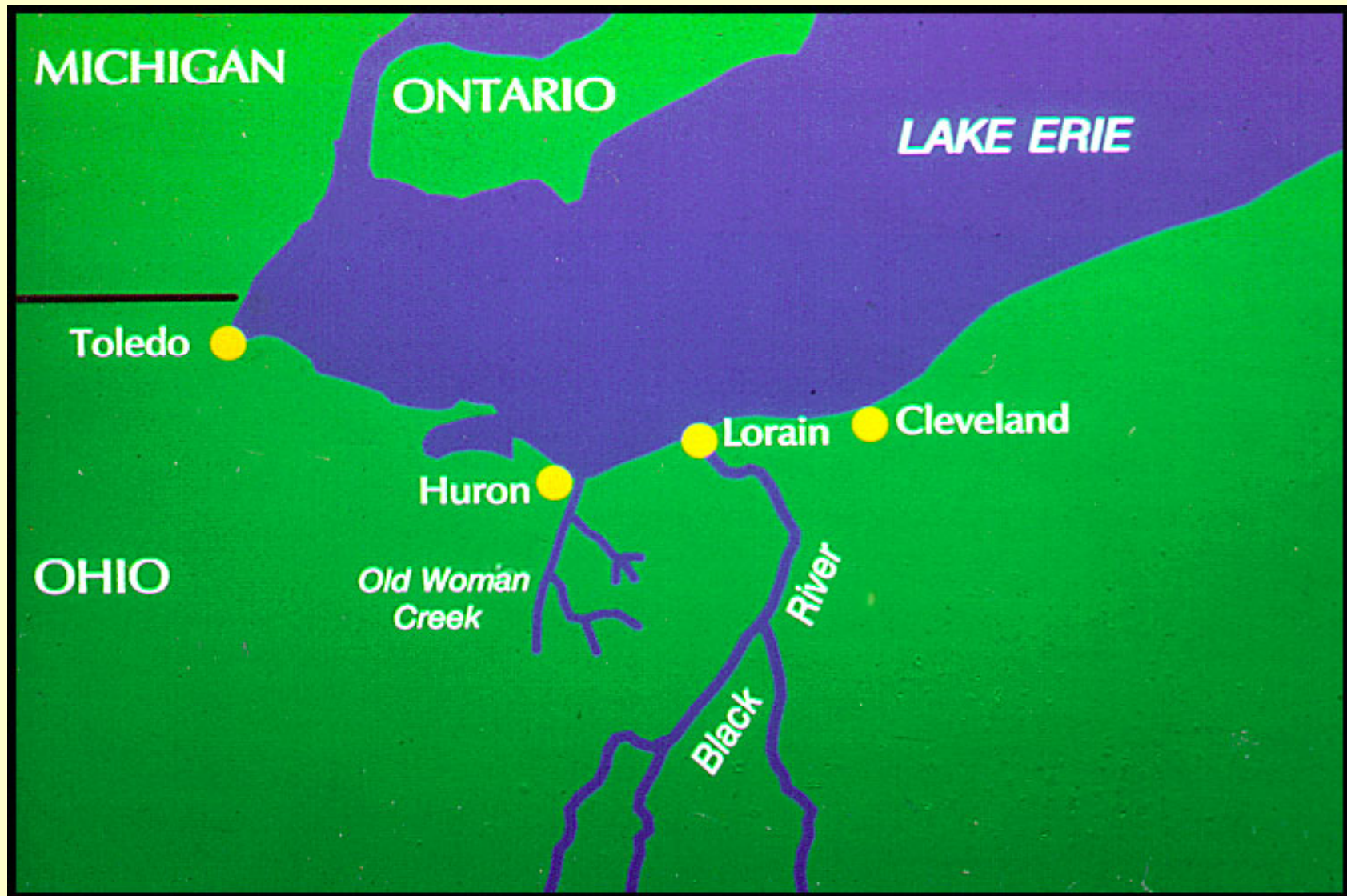
Mummichog

White sucker

Winter flounder







USX Facility



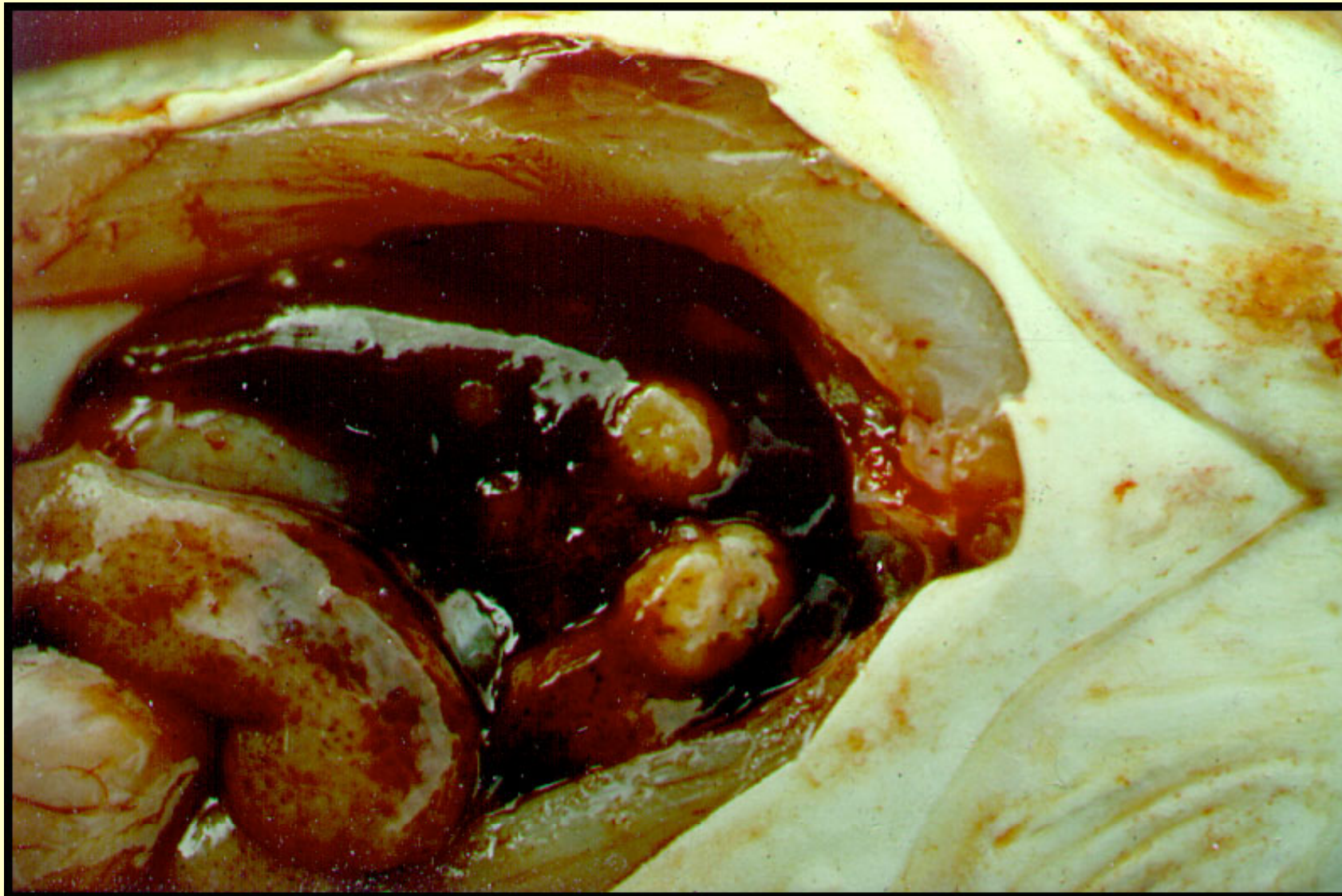
Coke Plant Outfall

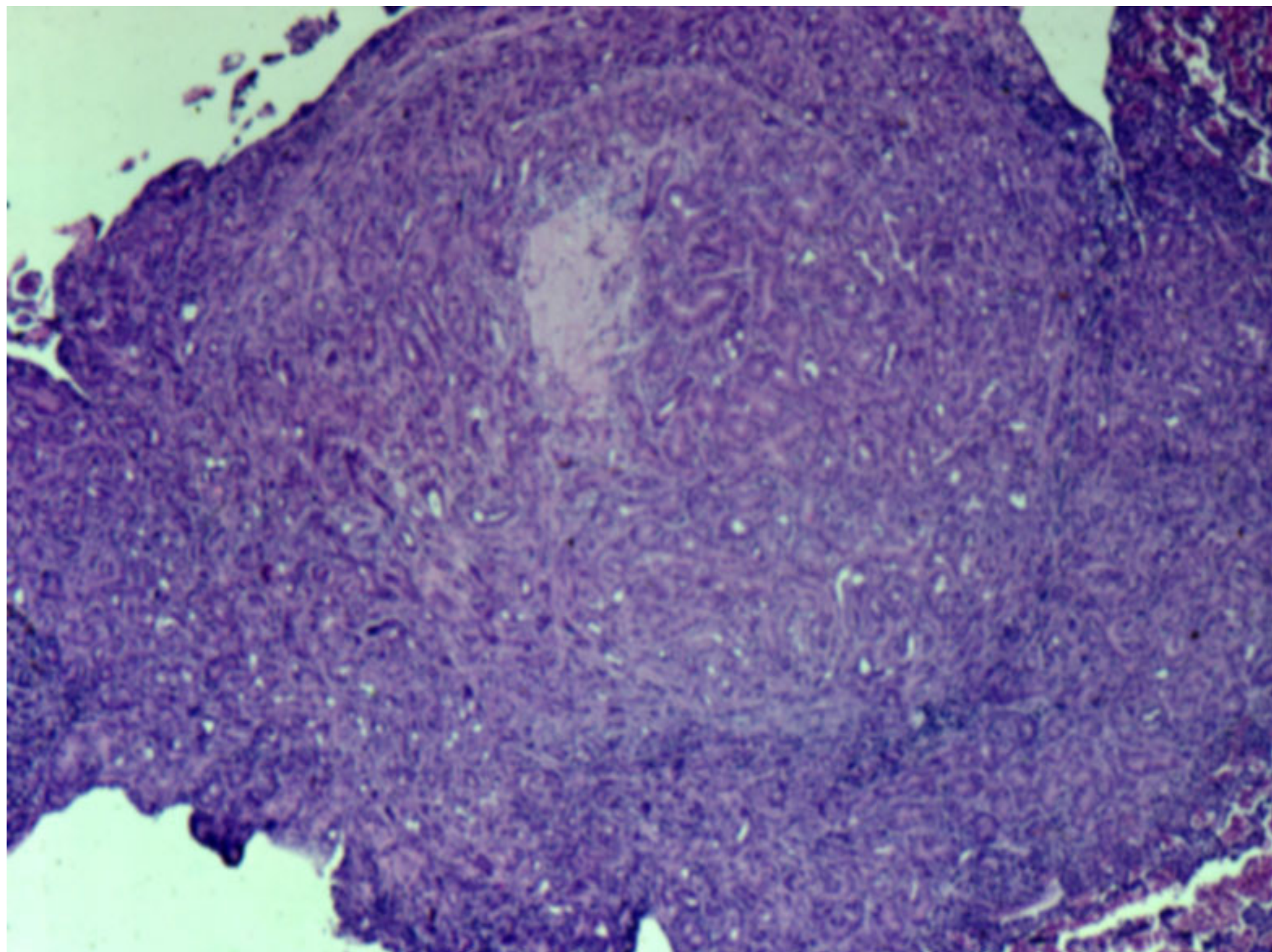


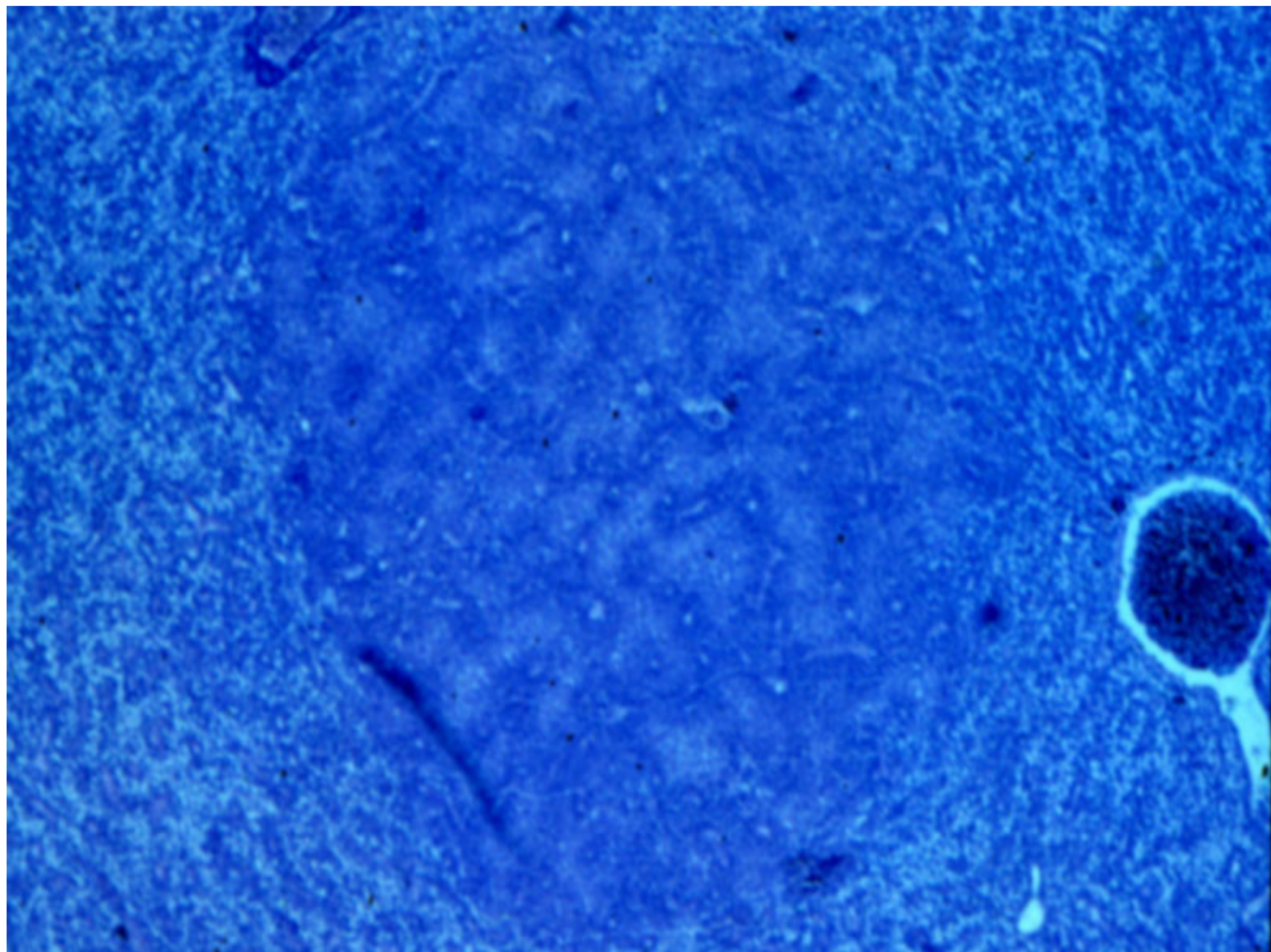
External Abnormalities



Internal Pathology



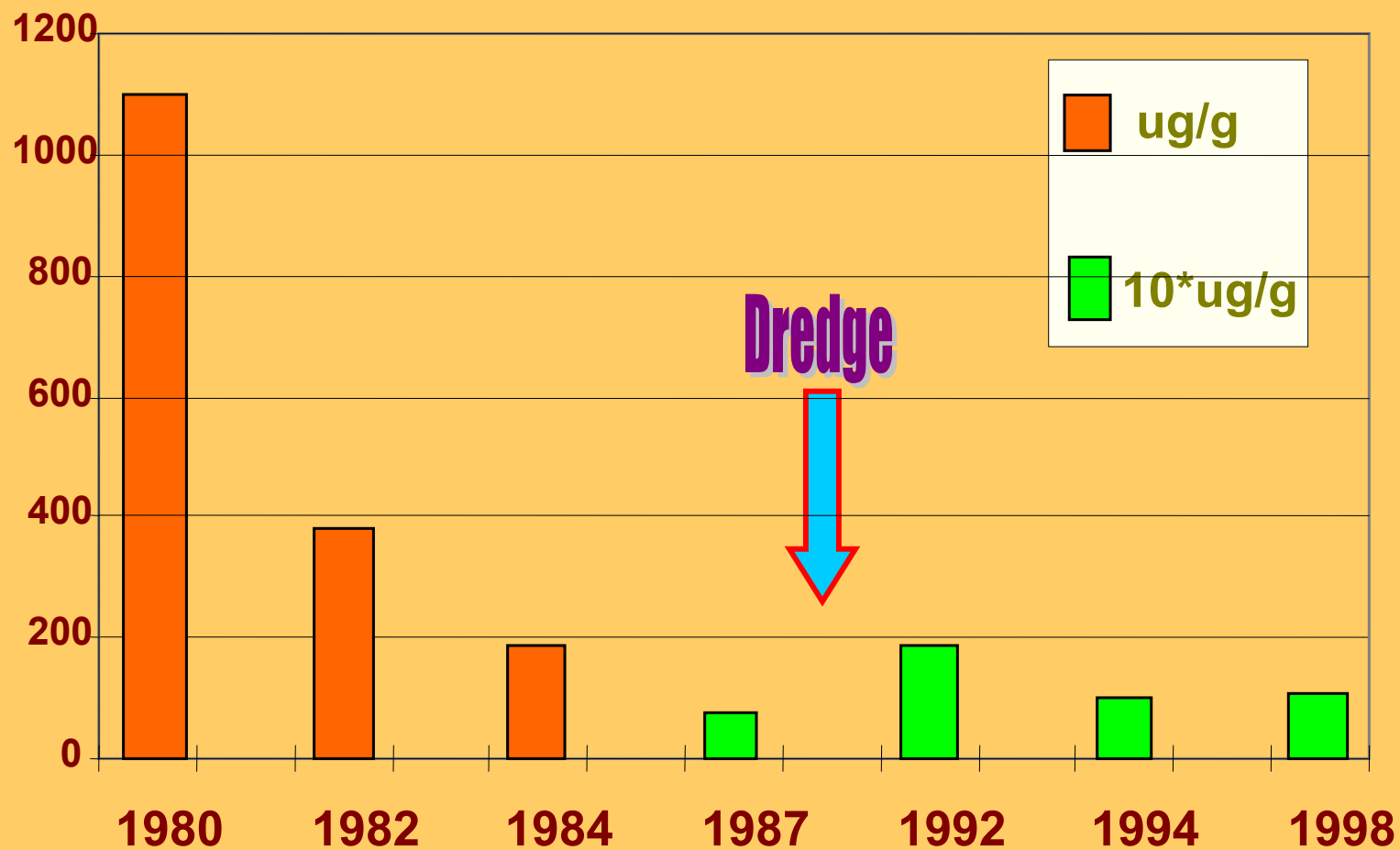




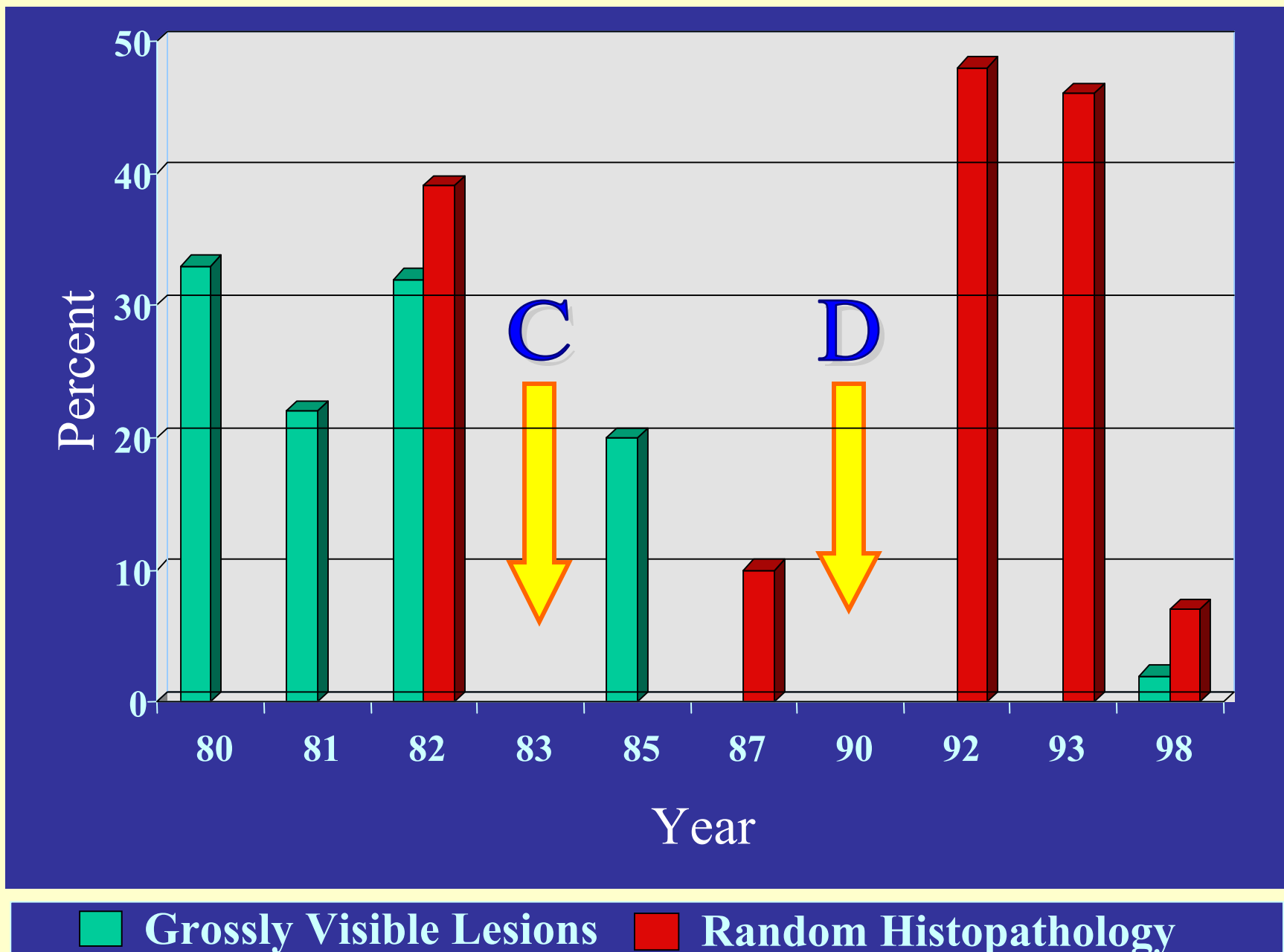
Black River Timeline

- 1980 Select
- 1981 Select
- 1982 Complete
- 1983 Coking Stops
- 1985 Select
- 1987 Complete
- 1990 Dredging
- 1992 Complete
- 1993 Complete
- 1994 Complete
- 1998 Complete

PAH (ug/g) in Black River Sediment

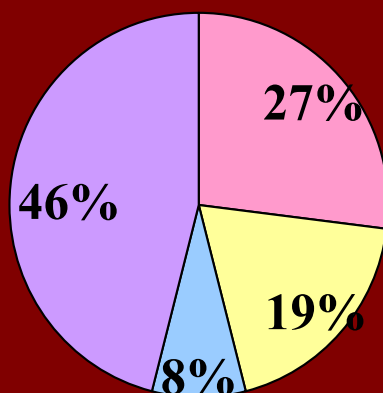


Bullhead Cancer Prevalence



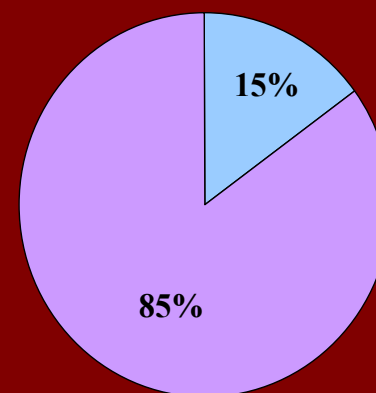
Neoplasms in Age 3 Fish

1992 N = 37



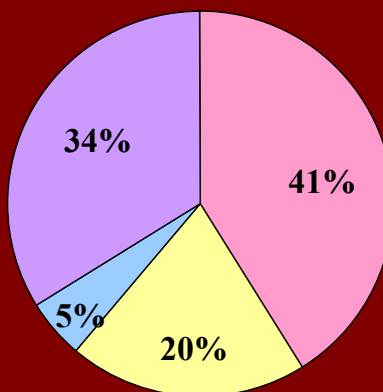
Age 1

1994 N = 27



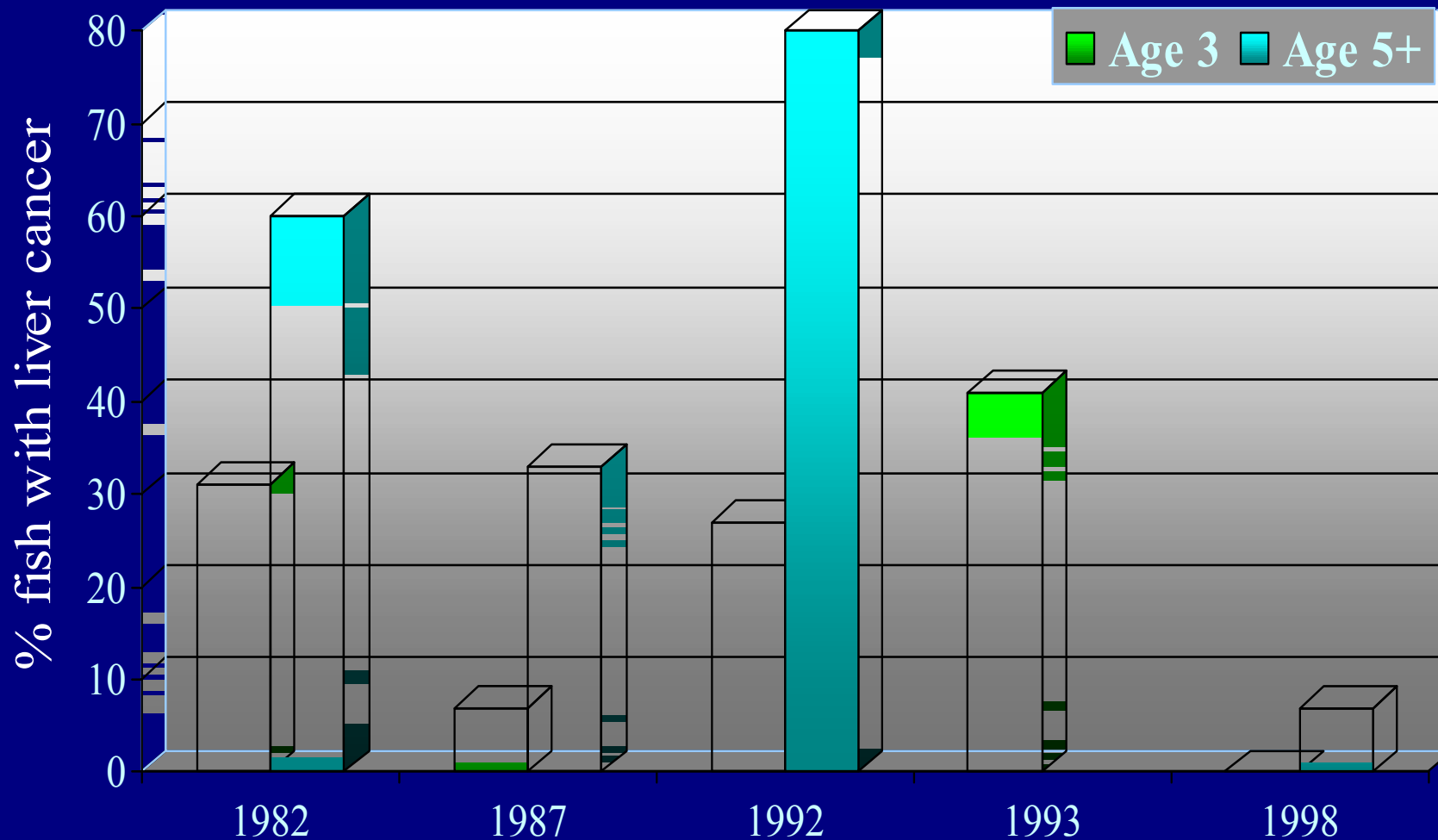
YOY 1991

1993 N = 56

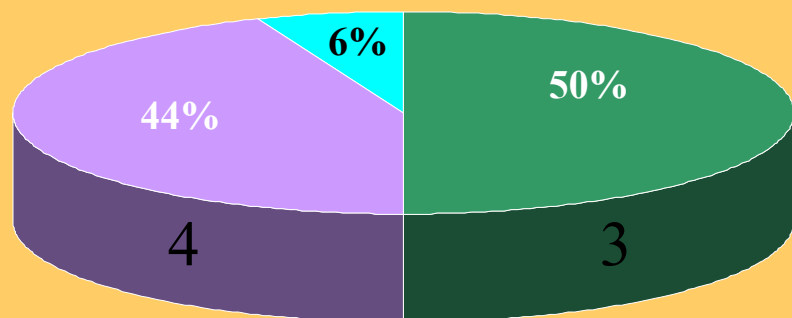


YOY

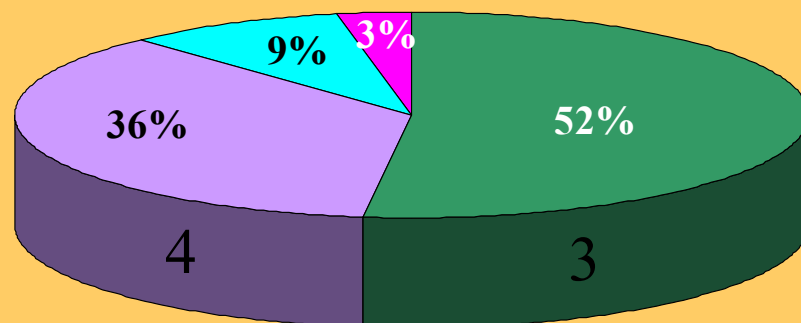
Liver Cancer of Fish Age 3 and 5+



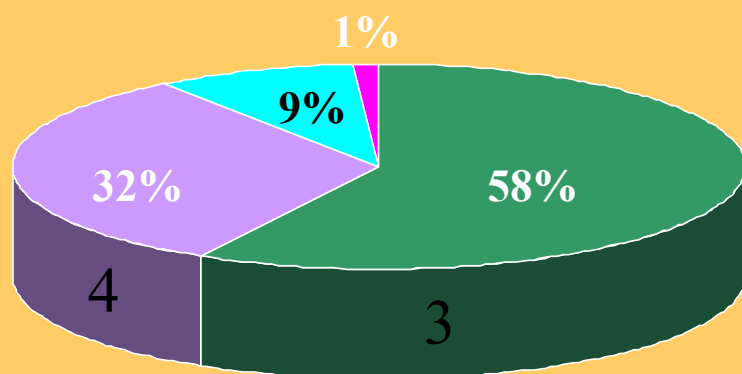
POPULATION EFFECTS



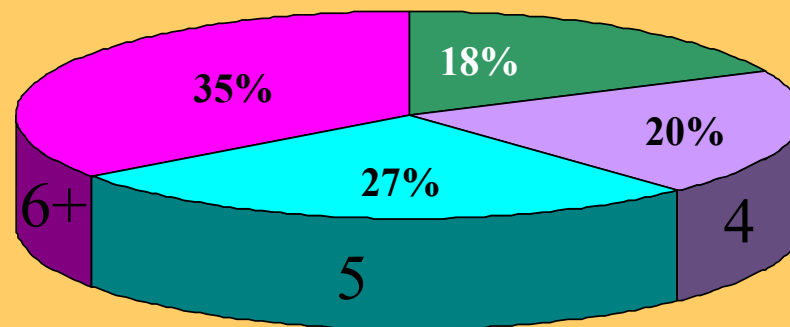
81 & 82



87



92 & 93



98