Chapter 15
The Effect of PCBs on the Spawning Migration of European Silver Eel (*Anguilla anguilla* L.)

Vincent van Ginneken, Maarten Bruijs, Tinka Murk, Arjan Palstra, and Guido van den Thillart

15.1 Introduction

Organochlorine compounds were widely used after the Second World War because they were cheap to produce and useful for many purposes, such as in agriculture for insecticides, in public health to control disease insect vectors and in industry (Pelletier et al. 2002). It is estimated that 16–30% of the 1 million tons of PCBs produced are still present in aquatic and terrestrial ecosystems (Borlakoglu and Haegele 1991). In spite of discharge restrictions, the concentrations of PCBs and chemically similar compounds in natural environments will likely remain elevated because of atmospheric transport and the internal cycling of contaminants already present in ecosystems. So, when not retrieved or destroyed, the rest of the PCBs will be released into the environment and eventually reach the oceans (Klamer et al. 1991). PCBs encompass a class of chlorinated compounds that includes up to 209 variations, or congeners, with different physical and chemical characteristics. They are ubiquitous environmental contaminants with specific modes of action (Safe 1984, 1990) and exposure to each of the congeners is associated with different levels of risk for harmful effects. Technical mixtures of PCBs, referred to by the trade names such as Aroclor, Phenoclor and Kanechlor, have been widely used for a variety of industrial purposes: hydraulic fluids in mining activities, plasticisers, fluid-filled capacitors and transformers, heat transfer fluids and paints. There are no known natural sources of PCBs. Most PCBs are oily liquids whose colour darkens and viscosity increases with rising chlorine content. PCBs with fewer chlorine atoms are more soluble, more amenable to chemical and biological degradation, and less persistent in the environment than those PCBs with more chlorine atoms bound to the biphenyl core (Safe 1984) (Fig. 15.1).

V. van Ginneken A. Palstra, and G. van den Thillart
Integrative Zoology, Institute of Biology Leiden, van der Klaauw Laboratories, P.O. Box 9516, Kaiserstraat 63, 2300 RA Leiden, The Netherlands

M. Bruijs
KEMA Technical and Operational Services. P.O. Box 9035, 6800 ET Arnhem, The Netherlands

T. Murk
Dept Toxicology Section, Wageningen University, Tuinlaan 5, POB 8000, 6700 EA, The Netherlands

G. van den Thillart et al. (eds.), *Spawning Migration of the European Eel,*