

INTRODUCTION	1
PHYSICAL AND CHEMICAL PROPERTIES OF PNA	3
Definition and Formation	3
Structure and Properties	5
Atmospheric Chemistry	32
References	39
ENERGY SOURCES OF PNA	43
Introduction	43
Petroleum	47
Coal	54
Oil Shale	66
Conclusions	68
References	70
CHARACTERISTICS OF PNA IN THE ENVIRONMENT	78
Background Concentrations	78
Existing Concentrations	83
Fate in Natural Water	97
Fate in Soils	106
Fate in Air	113
Environmental Transport Summary	118
References	119
MICROBIAL AND PHOTOCHEMICAL EFFECTS ON PNA	123
Microbial interactions with PNA	123
Photochemical Transformation of PNA	144
References	148
HEALTH EFFECTS	151
Exposure	151
Toxicity	170
Metabolism	173
Elimination	177
Carcinogenicity	179
Teratogenicity	202
Mutagenicity	210
References	214
HEALTH PROTECTION	226
Activities of Societies and Federal Agencies	226

Criterion Formulation	232
References	240
ANALYTICAL METHODS	243
Introduction	243
Nematic Liquid Crystals for PNA Separations	246
PNA In Liquid Fuel	249
PNA In U.S. Waters	257
PNA Analysis of Inland Water and Sediment	261
Fluorescent Spot Test for PNA Detection	263
Portable Fluorometric Monitor to Detect PNA	266
References	267
Addendum	269
SOURCES UTILIZED	270