

**A risk analysis-based approach for assessing the effects
of Pharmaceutical Pollutants (PPs) on river health and
options for river health restoration.**



A thesis submitted in partial fulfillment for the

Award of Degree

Doctor of Philosophy

By

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LIST OF ABBREVIATIONS

Abbreviations	Full Form
ABRB	Antibiotic-Resistant Bacteria
ABI	Index of biotic integrity
ABP	Algae Berger-Parker Index
AusRivAS	Australian River Assessment System
AF	Assessment Factor
ASs	Artificial Sweeteners
ASP	Activated Sludge Process
BCM	Billion Cubic Meters
BEAST	Benthic Assessment of Sediment
BOD	Biochemical Oxygen Demand
COD	Chemical Oxygen Demand
CAESA	Central Asian and Eastern European Surveillance of Antimicrobial Resistance
DDT	Dichloro-diphenyl Trichloroethane
DO	Dissolved Oxygen
DORPs	Dissolved Oxygen-Related Parameters
EC	Electrical Conductivity
ECOSAR	Ecological Structure–Activity Relationships
EDCs	Endocrine Disrupting Chemicals
EPs	Emerging Pollutants
EARS-Net	European Antimicrobial Resistance Surveillance Network

ERC	Ecological Risk Condition
BI	Fish index of biotic integrity
FBP	Fish Berger-Parker index
FN	Number of individuals
FS	Species-level richness
GRBMP	Ganga River Basin Management Plan
HQ	Hazard Quotient
HWW	Hospital wastewater
IGS	Indicator Group Score
IGC	Indicator Group Condition
LOEL	Lowest Observed Effect Level
log K _{ow}	Partition Coefficient
MBR	Membrane bioreactor
MBBR	Moving Bed Biofilm Reactor
MBMWP	Biological Monitoring Working Party Index
MBP	Berger-Parker Index
MEC	Measured Environmental Concentration
MEPTS	Family level richness of EPT taxa
MI	Macroinvertebrates
MPs	Microplastics
MS	Total number of taxa
MLD	Million Litres per Day
NCIWRD	National Commission for Integrated Water Resource Development
NSAIDs	Non-steroidal Anti-inflammatory Drugs

NOEL	No Observed Effect Level
NTs	Nutrients
NH ₃ -N	Ammonia Nitrogen
OEB	Organo-electrolytic-bacterial
P&C	Physico-chemical
PCPs	Personal Care Products
pH	Potential of Hydrogen
PPs	Pharmaceutical Pollutants
POPs	Persistent Organic Pollutants
PNEC	Predicted No-Effect Concentration
PACs	Pharmaceutical Active Compounds
PEC	Predicted Environmental Concentration
pKa	Ionization constant
RC _T	Threshold Risk Concentration
RQ	Risk Quotient
RQ _h	High-Risk Quotient
RQ _f	Optimized Risk Quotient
RHI	River Health Index
RHC	River Health Condition
RIVPACS	River Invertebrate Prediction and Classification System
STPs	Sewage Treatment Plants
SASS	South African Scoring System
SIS	Site Indicator Scores
SBR	Sequential Batch Reactor

TN	Total Nitrogen
TP	Total Phosphorous
USEPA	United States of Environment Protection Agency
WHO	World Health Organisation