Response function summary

```
RFxSum <- read_csv("Response_Fx_Summary.csv")
```

```
## Parsed with column specification:
## cols(
##   Study = col_character(),
##   study_long = col_character(),
##   Chemical = col_character(),
##   eec = col_double(),
##   eec_source = col_character(),
##   Class = col_character(),
##   Pathway = col_character(),
##   Species = col_character(),
##   System = col_character(),
##   Type = col_character(),
##   Response = col_character(),
##   parameter = col_character(),
##   rfx = col_character(),
##   best = col_integer(),
##   best_justification = col_character()
## )
```

```
table(RFxSum$Pathway)
```

```
##
##    bottom-up direct larvae  direct snail      top-down
##            6            39            38            53
```

```
table(RFxSum$System)
```

```
##
##         Any Haematobium      Mansoni       Other
##          56           12           48          20
```

```
RFxSum %>% filter(System != "Other") %>%
  group_by(Chemical, Pathway) %>%
  summarise(n = n()) %>%
  spread(key = Pathway, value = n) %>%
  rename("bottom_up" = !!names(.[2]),
         "direct_larvae" = !!names(.[3]),
         "direct_snail" = !!names(.[4]),
         "top_down" = !!names(.[5])) %>%
  mutate(num_records = sum(bottom_up, direct_larvae,
                           direct_snail, top_down, na.rm = TRUE)) %>%
  filter(num_records > 1) %>%
  select(-num_records) %>%
  replace_na(list("bottom_up" = 0,
                  "direct_larvae" = 0,
                  "direct_snail" = 0,
                  "top_down" = 0)) %>%
  knitr::kable()
```

Chemical	bottom_up	direct_larvae	direct_snail	top_down
2,4-D	0	0	0	3
Ammonium Fertilizer	1	7	2	1
Atrazine	2	3	2	1
Butachlor	0	2	1	1
Butralin	0	2	2	0
Carbaryl	0	0	0	5
Chlorpyrifos	0	5	3	6
Diazinon	0	0	2	0
Endosulfan	0	0	2	3
Esfenvalerate	0	0	0	2
Fenitrothion	0	0	0	3
Fluazifop-p-butyl	0	2	1	0
Glyphosate	0	2	4	0
Lambda-cyhalothrin	0	0	0	3
Malathion	0	2	2	3
Other Fertilizer	0	0	4	0
Pendimethalin	0	2	2	0
Permethrin	0	0	0	2
Profenofos	0	2	3	2
Terbufos	0	0	0	3
Trifluralin	0	0	0	2

```r
# For chemicals with adequate data, e.g. those that have evidence for approximately all hyphthesized pat
RFx_multis <- RFxSum %>% filter(Chemical %in% c("Atrazine", "Butachlor", "Butralin",
                                                "Chlorpyrifos", "Glyphosate", "Malathion", "Profenofos"),
                                System != "Other") %>%
  group_by(Chemical, parameter, System) %>%
  summarise(nfx = n(),
            matches = paste(Study, collapse = " ; "),
            species = paste(Species, collapse = " ; ")) %>% filter(nfx > 1)


RFxSum <- RFxSum %>% full_join(RFx_multis, by = c("Chemical", "parameter", "System"))
```

```r
#Get NAWQA data, functions, and response functions summary
load("~/RemaisWork/Schisto/R Codes/ag_schist/Agrochemical_Review/Sims/Data/NAWQA_dat_functions.RData")

nawqa_sum <- t(sapply(chems, get_nawqa_sum))
  colnames(nawqa_sum) <- c("nawqa.50", "nawqa.25", "nawqa.75")

study_sum <- RFxSum %>%
  inner_join(as.data.frame(cbind(Chemical = chems, nawqa_sum)), by = "Chemical") %>%
  group_by(study_long) %>%
  summarise(Chemicals = paste(unique(Chemical), collapse = ","),
            #Chemical_Class = paste(unique(Class), collapse = ","),
            #Peak_EEC = paste(unique(eec), collapse = ","),
            #NAWQA.50 = paste(unique(nawqa.50), collapse = ","),
            #NAWQA.25 = paste(unique(nawqa.25), collapse = ","),
            #NAWQA.75 = paste(unique(nawqa.75), collapse = ","),
            Species = paste(unique(Species), collapse = ","),
            Model_parameter = paste(unique(parameter), collapse = ","))
```

```
## Warning: Column `Chemical` joining character vector and factor, coercing
## into character vector

RFxSum %>% group_by(Chemical) %>%
  summarise(EEC = mean(eec),
            Source = first(eec_source)) %>%
  knitr::kable()
```

Chemical	EEC	Source
2,4-D	762.000	https://archive.epa.gov/pesticides/reregistration/web/pdf/24d_red.pdf
Ammonium Fertilizer	2272.664	N-study
Atrazine	102.000	https://doi:10.1038/s41467-018-03189-w
Azinphos-methyl	15.300	https://doi-org.libproxy.berkeley.edu/10.1016/S0045-6535(00)00601-9
Butachlor	202.000	https://archive.epa.gov/pesticides/reregistration/web/pdf/0177red.pdf
Butralin	16.890	Epa report
Carbaryl	33.500	https://doi.org/10.1645/GE-2078.1
Carbofuran	36.000	https://archive.epa.gov/pesticides/reregistration/web/pdf/carbofuran_red.pdf
Chlorpyrifos	64.000	http://dx.doi.org/10.1016/j.chemosphere.2015.03.091
Cypermethrin	5.900	https://doi.org/10.1016/j.agwat.2012.01.009
Deltamethrin	4.520	https://doi.org/10.1016/j.agwat.2012.01.009
Diazinon	429.000	https://archive.epa.gov/pesticides/reregistration/web/pdf/diazinon_red.pdf
Dichlorvos	2.330	https://archive.epa.gov/pesticides/reregistration/web/pdf/ddvp_ired.pdf
Dimethoate	33.400	https://archive.epa.gov/pesticides/reregistration/web/pdf/dimethoate_red.pdf
Endosulfan	7.600	https://archive.epa.gov/pesticides/chemicalsearch/chemical/foia/web/pdf/079401/07940
Esfenvalerate	1.030	http://dx.doi.org/10.1016/j.chemosphere.2015.03.091
Fenitrothion	36.600	https://archive.epa.gov/pesticides/reregistration/web/pdf/0445.pdf
Fluazifop-p-butyl	56.600	https://www.gpo.gov/fdsys/pkg/FR-2017-09-27/pdf/2017-20748.pdf
Glyphosate	1300.000	https://link.springer.com/content/pdf/10.1007%2F978-1-4612-1156-3_2.pdf
Lambda-cyhalothrin	1.770	http://dx.doi.org/10.1016/j.chemosphere.2015.03.091
Malathion	18.400	http://dx.doi.org/10.1016/j.chemosphere.2015.03.091
Methyldemeton	12.400	https://archive.epa.gov/pesticides/reregistration/web/pdf/odm_red.pdf
Metolachlor	186.000	https://archive.epa.gov/pesticides/reregistration/web/pdf/0001.pdf
Monocrotophos	21.300	https://archive.epa.gov/pesticides/reregistration/web/pdf/dicrotophos_red.pdf
MSMA	360.000	https://archive.epa.gov/pesticides/reregistration/web/pdf/organic_arsenicals_red.pdf
Oryzalin	368.100	https://archive.epa.gov/pesticides/reregistration/web/pdf/0186.pdf
Other Fertilizer	4400.000	PLACEHOLDER
Oust	NA	NA
Paraquat	4.800	https://archive.epa.gov/pesticides/reregistration/web/pdf/0262red.pdf
Pendimethalin	31.000	https://archive.epa.gov/pesticides/reregistration/web/pdf/0187red.pdf
Permethrin	5.980	http://dx.doi.org/10.1016/j.chemosphere.2015.03.091
Phosphamidon	NA	NA
Profenofos	15.380	https://doi.org/10.1016/j.agwat.2012.01.009
Quinalphos	4.000	https://pubs.acs.org/doi/pdf/10.1021/es00174a001
Terbufos	36.600	http://dx.doi.org/10.1016/j.chemosphere.2015.03.091
Tributyltin	13.700	https://archive.epa.gov/pesticides/reregistration/web/pdf/0099red.pdf
Trifluralin	7.010	https://archive.epa.gov/pesticides/reregistration/web/pdf/0179.pdf