Team ID	PNT2022TMID51603
Project Name	Efficient Water Quality Analysis and Prediction using Machine Learning

Water Quality Index Calculation 3

Calculation of Water Quality Index WQI

In [352]:
```
data['wph']=data.nph*0.165
data['wdo']=data.ndo*0.281
data['wbdo']=data.nbdo*0.234
data['wec']=data.nec*0.009
data['wna']=data.nna*0.028
data['wco']=data.nco*0.281
data['wqi']=data.wph+data.wdo+data.wbdo+data.wec+data.wna+data.wco
data
```

Out[352]:

	station	location	state	Temp	do	ph	co	bod	na	tc	year	nph	ndo	nco	nbdo	nec	nna	wph	wdo	wbdo
0	1393	DAMANGANGA AT D/S OF MADHUBAN, DAMAN	DAMAN & DIU	30.600000	6.7	7.5	203.0	6.940049	0.100000	27.0	2014	100	100	80	60	60	100	16.5	28.10	14.04
1	1399	ZUARI AT D/S OF PT. WHERE KUMBARJRIA CANAL JOI...	GOA	29.800000	5.7	7.2	189.0	2.000000	0.200000	8391.0	2014	100	100	40	100	60	100	16.5	28.10	23.40
2	1475	ZUARI AT PANCHAWADI	GOA	29.500000	6.3	6.9	179.0	1.700000	0.100000	5330.0	2014	80	100	40	100	60	100	13.2	28.10	23.40
3	3181	RIVER ZUARI AT BORIM BRIDGE	GOA	29.700000	5.8	6.9	64.0	3.800000	0.500000	8443.0	2014	80	100	40	80	100	100	13.2	28.10	18.72
4	3182	RIVER ZUARI AT MARCAIM JETTY	GOA	29.500000	5.8	7.3	83.0	1.900000	0.400000	5500.0	2014	100	100	40	100	80	100	16.5	28.10	23.40
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1986	1330	TAMBIRAPARANI AT ARUMUGANERI, TAMILNADU	NAN	26.209814	7.9	738.0	7.2	2.700000	0.518000	202.0	2003	0	100	60	100	100	100	0.0	28.10	23.40
1987	1450	PALAR AT VANIYAMBADI WATER SUPPLY HEAD WORK, T...	NAN	29.000000	7.5	585.0	6.3	2.600000	0.155000	315.0	2003	0	100	60	100	100	100	0.0	28.10	23.40
1988	1403	GUMTI AT U/S SOUTH TRIPURA,TRIPURA	NAN	28.000000	7.6	98.0	6.2	1.200000	1.623079	570.0	2003	0	100	40	100	100	100	0.0	28.10	23.40
1989	1404	GUMTI AT D/S SOUTH TRIPURA, TRIPURA	NAN	28.000000	7.7	91.0	6.5	1.300000	1.623079	562.0	2003	0	100	40	100	100	100	0.0	28.10	23.40
1990	1726	CHANDRAPUR, AGARTALA D/S OF HAORA RIVER, TRIPURA	NAN	29.000000	7.6	110.0	5.7	1.100000	1.623079	546.0	2003	0	80	40	100	100	100	0.0	22.48	23.40

1991 rows × 24 columns

Calculation of overall WQI for each year

In [354]:
```
average=data.groupby('year')['wqi'].mean()
average.head()
```

Out[354]:
```
year
2003    64.195909
2004    61.290000
2005    75.840672
2006    75.585905
2007    76.762000
Name: wqi, dtype: float64
```