In [1]:
```
import numpy as np
import pandas as pd
```

In [2]:
```
x=pd.read_csv(r"C:\Users\user\Downloads\9_bottle.csv")
print(x)
```

```
C:\ProgramData\Anaconda3\lib\site-packages\IPython\core\interactiveshell.py:3
165: DtypeWarning: Columns (47,73) have mixed types.Specify dtype option on i
mport or set low_memory=False.
  has_raised = await self.run_ast_nodes(code_ast.body, cell_name,

        Cst_Cnt  Btl_Cnt       Sta_ID                                Depth_ID
\
0             1        1  054.0 056.0  19-4903CR-HY-060-0930-05400560-0000A-3
1             1        2  054.0 056.0  19-4903CR-HY-060-0930-05400560-0008A-3
2             1        3  054.0 056.0  19-4903CR-HY-060-0930-05400560-0010A-7
3             1        4  054.0 056.0  19-4903CR-HY-060-0930-05400560-0019A-3
4             1        5  054.0 056.0  19-4903CR-HY-060-0930-05400560-0020A-7
...         ...      ...          ...                                   ...
864858    34404   864859  093.4 026.4  20-1611SR-MX-310-2239-09340264-0000A-7
864859    34404   864860  093.4 026.4  20-1611SR-MX-310-2239-09340264-0002A-3
864860    34404   864861  093.4 026.4  20-1611SR-MX-310-2239-09340264-0005A-3
864861    34404   864862  093.4 026.4  20-1611SR-MX-310-2239-09340264-0010A-3
864862    34404   864863  093.4 026.4  20-1611SR-MX-310-2239-09340264-0015A-3

        Depthm  T_degC   Salnty  O2ml_L    STheta   O2Sat  ...  R_PHAEO  \
0            0  10.500  33.4400     NaN  25.64900     NaN  ...      NaN
1            8  10.460  33.4400     NaN  25.65600     NaN  ...      NaN
2           10  10.460  33.4370     NaN  25.65400     NaN  ...      NaN
3           19  10.450  33.4200     NaN  25.64300     NaN  ...      NaN
4           20  10.450  33.4210     NaN  25.64300     NaN  ...      NaN
...        ...     ...      ...     ...       ...     ...  ...      ...
864858       0  18.744  33.4083   5.805  23.87055  108.74  ...     0.18
864859       2  18.744  33.4083   5.805  23.87072  108.74  ...     0.18
864860       5  18.692  33.4150   5.796  23.88911  108.46  ...     0.18
864861      10  18.161  33.4062   5.816  24.01426  107.74  ...     0.31
864862      15  17.533  33.3880   5.774  24.15297  105.66  ...     0.61

        R_PRES  R_SAMP  DIC1  DIC2  TA1  TA2  pH2  pH1  DIC Quality Comment
0            0     NaN   NaN   NaN  NaN  NaN  NaN  NaN                 NaN
1            8     NaN   NaN   NaN  NaN  NaN  NaN  NaN                 NaN
2           10     NaN   NaN   NaN  NaN  NaN  NaN  NaN                 NaN
3           19     NaN   NaN   NaN  NaN  NaN  NaN  NaN                 NaN
4           20     NaN   NaN   NaN  NaN  NaN  NaN  NaN                 NaN
...        ...     ...   ...   ...  ...  ...  ...  ...                 ...
864858       0     NaN   NaN   NaN  NaN  NaN  NaN  NaN                 NaN
864859       2     4.0   NaN   NaN  NaN  NaN  NaN  NaN                 NaN
864860       5     3.0   NaN   NaN  NaN  NaN  NaN  NaN                 NaN
864861      10     2.0   NaN   NaN  NaN  NaN  NaN  NaN                 NaN
864862      15     1.0   NaN   NaN  NaN  NaN  NaN  NaN                 NaN

[864863 rows x 74 columns]
```

In [3]:
```
x=x.head(1000)
x
```

Out[3]:

	Cst_Cnt	Btl_Cnt	Sta_ID	Depth_ID	Depthm	T_degC	Salnty	O2ml_L	STheta	O2Sat	...
0	1	1	054.0 056.0	19-4903CR-HY-060-0930-05400560-0000A-3	0	10.50	33.440	NaN	25.649	NaN	...
1	1	2	054.0 056.0	19-4903CR-HY-060-0930-05400560-0008A-3	8	10.46	33.440	NaN	25.656	NaN	...
2	1	3	054.0 056.0	19-4903CR-HY-060-0930-05400560-0010A-7	10	10.46	33.437	NaN	25.654	NaN	...
3	1	4	054.0 056.0	19-4903CR-HY-060-0930-05400560-0019A-3	19	10.45	33.420	NaN	25.643	NaN	...
4	1	5	054.0 056.0	19-4903CR-HY-060-0930-05400560-0020A-7	20	10.45	33.421	NaN	25.643	NaN	...
...	...	...	...	...	...	...	...	...	...	...	...
995	33	996	092.0 088.0	19-4903NS-HY-061-0906-09200880-0300A-7	300	7.22	34.040	NaN	26.636	NaN	...
996	33	997	092.0 088.0	19-4903NS-HY-061-0906-09200880-0379A-3	379	6.58	34.040	NaN	26.724	NaN	...
997	33	998	092.0 088.0	19-4903NS-HY-061-0906-09200880-0400A-7	400	6.44	34.049	NaN	26.750	NaN	...
998	33	999	092.0 088.0	19-4903NS-HY-061-0906-09200880-0500A-7	500	5.85	34.113	NaN	26.876	NaN	...

	Cst_Cnt	Btl_Cnt	Sta_ID	Depth_ID	Depthm	T_degC	Salnty	O2ml_L	STheta	O2Sat	...
999	33	1000	092.0 088.0	19-4903NS-HY-061-0906-09200880-0552A-3	552	5.60	34.160	NaN	26.944	NaN	...

1000 rows × 74 columns

In [4]:
```
x.tail(5)
```

Out[4]:

	Cst_Cnt	Btl_Cnt	Sta_ID	Depth_ID	Depthm	T_degC	Salnty	O2ml_L	STheta	O2Sat	...
995	33	996	092.0 088.0	19-4903NS-HY-061-0906-09200880-0300A-7	300	7.22	34.040	NaN	26.636	NaN	...
996	33	997	092.0 088.0	19-4903NS-HY-061-0906-09200880-0379A-3	379	6.58	34.040	NaN	26.724	NaN	...
997	33	998	092.0 088.0	19-4903NS-HY-061-0906-09200880-0400A-7	400	6.44	34.049	NaN	26.750	NaN	...
998	33	999	092.0 088.0	19-4903NS-HY-061-0906-09200880-0500A-7	500	5.85	34.113	NaN	26.876	NaN	...
999	33	1000	092.0 088.0	19-4903NS-HY-061-0906-09200880-0552A-3	552	5.60	34.160	NaN	26.944	NaN	...

5 rows × 74 columns

In [5]:
```
x.dtypes
```

Out[5]:
```
Cst_Cnt                  int64
Btl_Cnt                  int64
Sta_ID                  object
Depth_ID                object
Depthm                   int64
                        ...
TA1                   float64
TA2                   float64
pH2                   float64
pH1                   float64
DIC Quality Comment    object
Length: 74, dtype: object
```

In [6]:
```
x.index
```

Out[6]:
```
RangeIndex(start=0, stop=1000, step=1)
```

In [7]:
```
x.describe()
```

Out[7]:

	Cst_Cnt	Btl_Cnt	Depthm	T_degC	Salnty	O2ml_L	STheta	O2Sa
count	1000.000000	1000.000000	1000.000000	998.000000	970.000000	0.0	968.000000	0
mean	16.803000	500.500000	329.604000	8.408657	33.668295	NaN	26.106232	Na
std	9.500972	288.819436	346.635231	3.237212	0.509149	NaN	0.855427	Na
min	1.000000	1.000000	0.000000	2.780000	32.630000	NaN	23.706000	Na
25%	9.000000	250.750000	50.000000	5.482500	33.220500	NaN	25.182250	Na
50%	16.000000	500.500000	189.500000	8.430000	33.748000	NaN	26.239000	Na
75%	25.000000	750.250000	515.250000	11.342500	34.108750	NaN	26.888000	Na
max	33.000000	1000.000000	1352.000000	19.760000	34.650000	NaN	27.581000	Na

8 rows × 70 columns

In [8]:
```
x["Salnty"]
```

Out[8]:
```
0      33.440
1      33.440
2      33.437
3      33.420
4      33.421
        ...
995    34.040
996    34.040
997    34.049
998    34.113
999    34.160
Name: Salnty, Length: 1000, dtype: float64
```

In [9]:
```
x.loc[1:7]
```

Out[9]:

	Cst_Cnt	Btl_Cnt	Sta_ID	Depth_ID	Depthm	T_degC	Salnty	O2ml_L	STheta	O2Sat	...	R
1	1	2	054.0 056.0	19-4903CR-HY-060-0930-05400560-0008A-3	8	10.46	33.440	NaN	25.656	NaN	...	
2	1	3	054.0 056.0	19-4903CR-HY-060-0930-05400560-0010A-7	10	10.46	33.437	NaN	25.654	NaN	...	
3	1	4	054.0 056.0	19-4903CR-HY-060-0930-05400560-0019A-3	19	10.45	33.420	NaN	25.643	NaN	...	
4	1	5	054.0 056.0	19-4903CR-HY-060-0930-05400560-0020A-7	20	10.45	33.421	NaN	25.643	NaN	...	
5	1	6	054.0 056.0	19-4903CR-HY-060-0930-05400560-0030A-7	30	10.45	33.431	NaN	25.651	NaN	...	
6	1	7	054.0 056.0	19-4903CR-HY-060-0930-05400560-0039A-3	39	10.45	33.440	NaN	25.658	NaN	...	
7	1	8	054.0 056.0	19-4903CR-HY-060-0930-05400560-0050A-7	50	10.24	33.424	NaN	25.682	NaN	...	

7 rows × 74 columns

In [10]:
```
x.fillna(value=100)
```

Out[10]:

	Cst_Cnt	Btl_Cnt	Sta_ID	Depth_ID	Depthm	T_degC	Salnty	O2ml_L	STheta	O2Sat	...
0	1	1	054.0 056.0	19-4903CR-HY-060-0930-05400560-0000A-3	0	10.50	33.440	100.0	25.649	100.0	...
1	1	2	054.0 056.0	19-4903CR-HY-060-0930-05400560-0008A-3	8	10.46	33.440	100.0	25.656	100.0	...
2	1	3	054.0 056.0	19-4903CR-HY-060-0930-05400560-0010A-7	10	10.46	33.437	100.0	25.654	100.0	...
3	1	4	054.0 056.0	19-4903CR-HY-060-0930-05400560-0019A-3	19	10.45	33.420	100.0	25.643	100.0	...
4	1	5	054.0 056.0	19-4903CR-HY-060-0930-05400560-0020A-7	20	10.45	33.421	100.0	25.643	100.0	...
...	...	...	...	...	...	...	...	...	...	...	...
995	33	996	092.0 088.0	19-4903NS-HY-061-0906-09200880-0300A-7	300	7.22	34.040	100.0	26.636	100.0	...
996	33	997	092.0 088.0	19-4903NS-HY-061-0906-09200880-0379A-3	379	6.58	34.040	100.0	26.724	100.0	...
997	33	998	092.0 088.0	19-4903NS-HY-061-0906-09200880-0400A-7	400	6.44	34.049	100.0	26.750	100.0	...
998	33	999	092.0 088.0	19-4903NS-HY-061-0906-09200880-0500A-7	500	5.85	34.113	100.0	26.876	100.0	...

	Cst_Cnt	Btl_Cnt	Sta_ID	Depth_ID	Depthm	T_degC	Salnty	O2ml_L	STheta	O2Sat	...
999	33	1000	092.0 088.0	19-4903NS-HY-061-0906-09200880-0552A-3	552	5.60	34.160	100.0	26.944	100.0	...

1000 rows × 74 columns

In [11]:
```
x.dropna()
```

Out[11]:

Cst_Cnt	Btl_Cnt	Sta_ID	Depth_ID	Depthm	T_degC	Salnty	O2ml_L	STheta	O2Sat	...	R_P

0 rows × 74 columns

In [12]:
```
x.columns
```

Out[12]:
```
Index(['Cst_Cnt', 'Btl_Cnt', 'Sta_ID', 'Depth_ID', 'Depthm', 'T_degC',
       'Salnty', 'O2ml_L', 'STheta', 'O2Sat', 'Oxy_µmol/Kg', 'BtlNum',
       'RecInd', 'T_prec', 'T_qual', 'S_prec', 'S_qual', 'P_qual', 'O_qual',
       'SThtaq', 'O2Satq', 'ChlorA', 'Chlqua', 'Phaeop', 'Phaqua', 'PO4uM',
       'PO4q', 'SiO3uM', 'SiO3qu', 'NO2uM', 'NO2q', 'NO3uM', 'NO3q', 'NH3uM',
       'NH3q', 'C14As1', 'C14A1p', 'C14A1q', 'C14As2', 'C14A2p', 'C14A2q',
       'DarkAs', 'DarkAp', 'DarkAq', 'MeanAs', 'MeanAp', 'MeanAq', 'IncTim',
       'LightP', 'R_Depth', 'R_TEMP', 'R_POTEMP', 'R_SALINITY', 'R_SIGMA',
       'R_SVA', 'R_DYNHT', 'R_O2', 'R_O2Sat', 'R_SIO3', 'R_PO4', 'R_NO3',
       'R_NO2', 'R_NH4', 'R_CHLA', 'R_PHAEO', 'R_PRES', 'R_SAMP', 'DIC1',
       'DIC2', 'TA1', 'TA2', 'pH2', 'pH1', 'DIC Quality Comment'],
      dtype='object')
```

In [13]:
```
x.dropna(axis=1,how="any")
```

Out[13]:

	Cst_Cnt	Btl_Cnt	Sta_ID	Depth_ID	Depthm	RecInd	P_qual	O_qual	O2Satq	Chlqua	...
0	1	1	054.0 056.0	19-4903CR-HY-060-0930-05400560-0000A-3	0	3	9.0	9.0	9.0	9.0	...
1	1	2	054.0 056.0	19-4903CR-HY-060-0930-05400560-0008A-3	8	3	9.0	9.0	9.0	9.0	...
2	1	3	054.0 056.0	19-4903CR-HY-060-0930-05400560-0010A-7	10	7	9.0	9.0	9.0	9.0	...
3	1	4	054.0 056.0	19-4903CR-HY-060-0930-05400560-0019A-3	19	3	9.0	9.0	9.0	9.0	...
4	1	5	054.0 056.0	19-4903CR-HY-060-0930-05400560-0020A-7	20	7	9.0	9.0	9.0	9.0	...
...	...	...	...	...	...	...	...	...	...	...	...
995	33	996	092.0 088.0	19-4903NS-HY-061-0906-09200880-0300A-7	300	7	9.0	9.0	9.0	9.0	...
996	33	997	092.0 088.0	19-4903NS-HY-061-0906-09200880-0379A-3	379	3	9.0	9.0	9.0	9.0	...
997	33	998	092.0 088.0	19-4903NS-HY-061-0906-09200880-0400A-7	400	7	9.0	9.0	9.0	9.0	...
998	33	999	092.0 088.0	19-4903NS-HY-061-0906-09200880-0500A-7	500	7	9.0	9.0	9.0	9.0	...

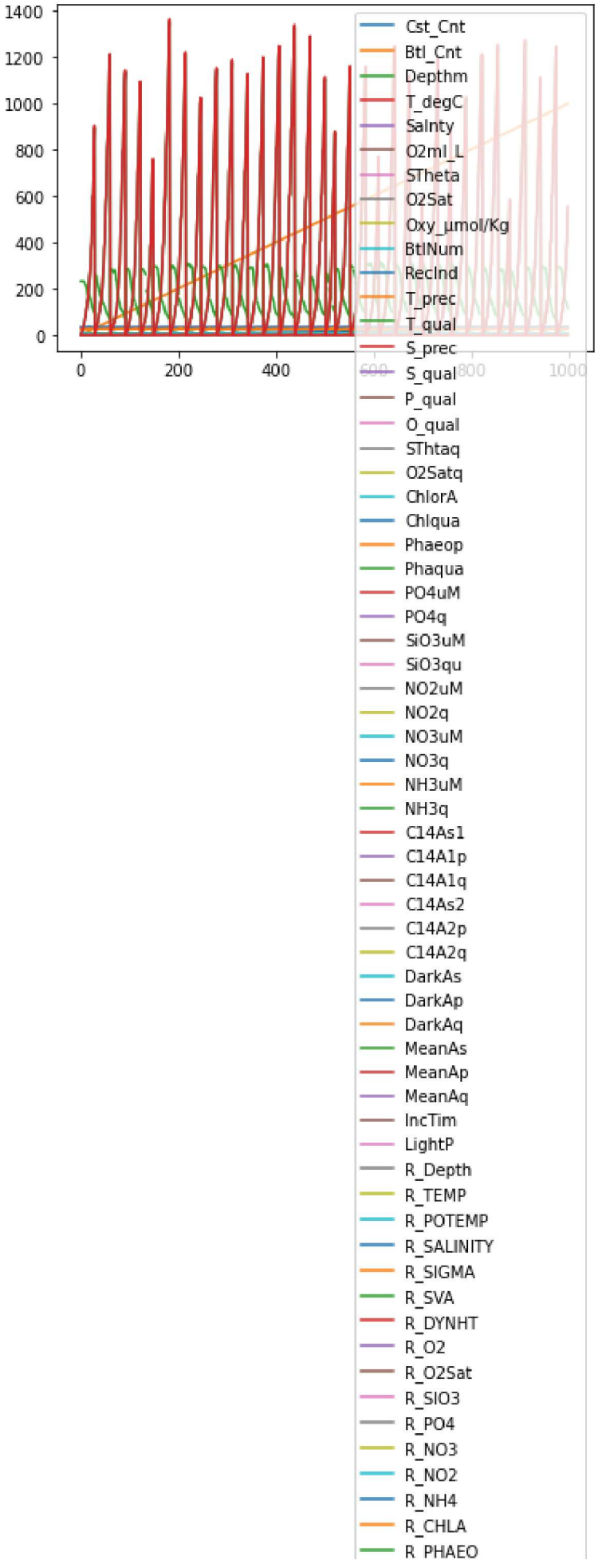
	Cst_Cnt	Btl_Cnt	Sta_ID	Depth_ID	Depthm	RecInd	P_qual	O_qual	O2Satq	Chlqua	...
999	33	1000	092.0 088.0	19-4903NS-HY-061-0906-09200880-0552A-3	552	3	9.0	9.0	9.0	9.0	...

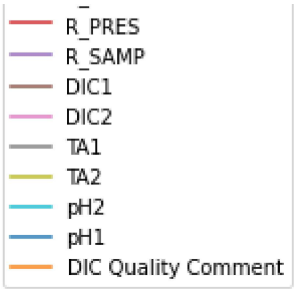
1000 rows × 22 columns

In [14]:
```
import matplotlib.pyplot as pp
```

In [23]:
```
x.plot.line()
```

Out[23]:
```
<AxesSubplot:>
```


1400
1200
1000
800
600
400
200
0
0
200
400
600
800
1000
Cst_Cnt
Btl_Cnt
Depthm
T_degC
Salnty
O2ml_L
STheta
O2Sat
Oxy_µmol/Kg
BtlNum
RecInd
T_prec
T_qual
S_prec
S_qual
P_qual
O_qual
SThtaq
O2Satq
ChlorA
Chlqua
Phaeop
Phaqua
PO4uM
PO4q
SiO3uM
SiO3qu
NO2uM
NO2q
NO3uM
NO3q
NH3uM
NH3q
C14As1
C14A1p
C14A1q
C14As2
C14A2p
C14A2q
DarkAs
DarkAp
DarkAq
MeanAs
MeanAp
MeanAq
IncTim
LightP
R_Depth
R_TEMP
R_POTEMP
R_SALINITY
R_SIGMA
R_SVA
R_DYNHT
R_O2
R_O2Sat
R_SIO3
R_PO4
R_NO3
R_NO2
R_NH4
R_CHLA
R_PHAEO



In [*]:
```
x=x.head(50)
print(x)
```

In [*]:
```
x.plot.bar()
```

In [ ]:
```

```