SUMMARY

- The ability of microbial communities of nine soil, sludge and water samples to grow on 7 different chloroaromatic compounds were determined.
- Microbial community of soil "3" showed the highest growth on 1mM of 1,4-dichlorobenzene.
- Indigenous microbial population of soil "3" revealed the highest growth on 1mM was recorded on 4-chloroaniline.
- Growth on 1mM of 4-chlorophenol indicated that soils 1,2,4 and 8 gave the best results.
- The best grown communities on 1mM of chlorobenzene were that of soils and sludge 1,3,4 and 8.
- Microbial populations of soil "3" recorded the best growth on 1mM of 2-chloroaniline.
- Indigenous populations of soils 8,1 and 4 revealed the best growth on 1mM of 1,2-dichlorobenzene.
- Microbial population of sludge grow well on 10μM of 2,6-dichlorophenol indolphenol sodium salt.
- Indigenous populations of soil "3" recorded the best growth on 3mM of 4-chloroaniline.
- Microbial populations of soil "1" gave the best growth on 3mM of 4-chlorophenol.
- Microbial populations of soil "8" gave the best growth on 3mM of chlorobenzene.

- All the four microbial populations of 2,3,4,8 grew slightly on 3mM of 2-chloroaniline.
- Microbial populations showed to some extent growth on 3mM of 1,2-dichlorobenzene.
- Microbial communities of soils and sludge gave a good growth on 100μM of 2,6-dichlorophenol indolphenol sodium salt greater than those of water samples which also gave good results.
- The best growing population was that of soil "3" on 5mM of 1,4-dichlorobenzene.
- Also soil "3" revealed the best growth on 5mM of 4-chloroaniline.
- Growth of different populations on 3mM and 5mM were fast at the first 7 days and it decreased as the concentrations increased.
- Count of populations grown on 1mM of 1,4-dichlorobenzene and 4-chloroaniline were higher than that on 3mM which were subsequently higher than that on 5mM.
- In general count of 1mM was higher than that of 3mM in all microbial populations degrading 4-chlorophenol, chlorobenzene, 2-chloroaniline and 1,2-dichlorobenzene.
- 120 colonies were characterized isolated from different soil and sludge samples on different chloroaromatic compounds.
- Only 31 colonies were able to grow on 500μM and 1000μM of 2,6-dichlorophenol indolphenol sodium salt.
- The most promising colonies capable of growing on 1000μM of 2,6-dichlorophenol indolphenol sodium salt were exposed to different doses of gamma irradiation.

- 3 KGy reduced the count 9.4, 9.7, 10.2, 8.2 log cycles to the isolates MAM-106, MAM-107, MAM-109, MAM-94 respectively and reduced the viability completely to MAM-108, MAM-104 isolates.
- 4 KGy reduced the viability of MAM-95 completely, 5 KGy reduced the viability of MAM-89 by 6.7 log cycles, 8 KGy reduced the viability of MAM-101 completely, while 10 KGy reduced the count of MAM-96 by 2.5 log cycles.
- Control of all the ten isolates were able to grow on 2mM of 2,6-dichlorophenol indolphenol sodium salt, while the growth of the isolates exposed to the gamma irradiation was stronger than control.
- Non of the ten isolates (control) able to grow on 3mM of 2,6-dichlorophenol indolphenol sodium salt, while some colonies of these isolates which exposed to gamma irradiation able to grow on this concentration.
- The most grown isolate on 8mM of 1,4-dichlorobenzene, 4-chloroaniline, 2-chloroaniline, 1,2-dichlorobenzene and 4-chlorophenol was MAM-96 which represent *Bacilli*, while its control can't grow on 8mM of 4-chlorophenol.
- Isolate MAM-104 can't grow on 8mM of 4-chlorophenol while its mutant exposed to 0.5KGy can grow, Isolate MAM-108 can't grow on 8mM of both 2-chloroaniline and 1,2-dichlorobenzene but its mutant exposed to 0.5, 1.0, 1.5KGy can grow, mean while, MAM-106 can't grow on 8mM of both 1,4-dichlorobenzene and chlorobenzene but its mutants exposed to 0.5 and 1.0KGy able to grow.

- MAM-96 was chosen to determine the analytical analysis using HPLC.
- MAM-96 remove 77% of 1mM of 2,6-dichlorophenol indolphenol sodium salt after 15 days.
- MAM-96 remove 98.5%, 95.3%, 98.3%, 100%, 100% and 15% from 3mM of 1,4-dichlorobenzene, 4-chloroaniline, 2-chloroaniline, 1,2-dichlorobenzene and chlorobenzene respectively after 15 days.
- The ten chosen strains grown on 3mM of different chloroaromatic compounds were scanned by electron microscope.