**Unit 3-4 SAC discussion**

**SAC s in general** -

* Should not be tests.
* Each task should only assess concepts found in that AOS.
* Don’t have to address all Key Skills
* You have 4 types of task to choose from and each task needs to be a different one of these four categories.
* It will be difficult to decide which category a task belongs to but that does not matter eg a set of experiments on galvanic cells could lead to problem solving or comparison of experiments or data generation.
* Don’t use commercial work without adaptation.
* Give the students clear details beforehand.
* Assessment must be transparent.
* Do things that are useful and interesting.
* Unit 1-2 SACs

Can be assessed as S/N => infographics are fine

The four categories you have to choose from are

For each outcome, one task selected from:

* comparison and evaluation of chemical concepts, methodologies and methods, and findings from at least two practical activities

***English translation: Find related experiments and look for links between them***

***Eg: multiple electrolysis, equilibrium experiments, calorimeters, organic synthesis, titrations***

* analysis and evaluation of primary and/or secondary data, including identified assumptions or data limitations, and conclusions

***Eg: electrolysis data, calorimeter data, galvanic cells, interpreting instrumentation, enthalpy values, enzyme reactions***

* problem-solving, including calculations, using chemistry concepts and skills applied to real-world contexts

***Eg. Improving equilibrium yield, choosing the best battery to use, improving thermochemistry results, extracting medicines, rate of reaction investigations***

* analysis and evaluation of a chemical innovation, research study, case study, socio-scientific issue, or media communication.

***Eg Hydrogen production, PEM cells, innovative batteries, medicinal plant, bioethanol plant***

**Notes**:

* Be careful that primary cells and secondary cells are in different AOS => a task should not incorporate both of these
* The same experiments you have always done are probably still okay.
* The same idea can be set up as several types of task. An experiment comparison could also be problem solving or data eg. Maximising cell voltage in galvanic cells.

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| Task type | U3 AOS 1 | U3 AOS 2 | U4 AOS1 | U4 AOS2 |
| Comparison  evaluation | Calorimetry exp  Fuel enthalpy | Equilibrium experiments | Manufacture ester/aspirin | Redox titrations  Vitamin C  Iron/KMnO4  Steam distillation and analysis of products |
| Data | Fuels enthalpy  Calorimeter exp  E0 table  Fermentation | Faraday’s Laws  Reaction rate data | Comparing properties of organics | Enzyme reaction rates |
| Problem | Maximise cell voltage | Choosing best cell  Improving yield | Pathways for producing organics  Sustainable pathways | Identifying molecules from print-outs |
| Media/ Case | New primary cell | Green hydrogen  Vanadium flow batteries  Sodium-ion cell | Vinegar manufacture | New plant extract |

**Poster/investigation**: Investigating variables in galvanic cell.

Comparison of fuels through different forms of calorimetry

Buring of food item

Production of aspirin/esters

Production of bioethanol and rate of the reaction

The investigation involves the generation of primary data related to the production of energy and/or chemicals and/or the analysis or synthesis of organic compounds, and should be inspired by a contemporary chemical challenge or issue.