FLASHPOINT

NZ INSTITUTE OF HAZARDOUS SUBSTANCES MANAGEMENT

Spring 2023

Balance in the wonderful world of oil

also

Spam, Scam and AI

Alternative Fuels

USEFUL ORGANISATIONAL CONTACTS

NZ Institute of Hazardous Substances Management

www.nzihsm.org.nz

The official home of professionals committed to the safe management of hazardous substances and dangerous goods. The NZIHSM is a 'not for profit' industry association specialising in improving safety, health and (site) environmental performance, particularly the safe management of hazardous substances in the community.

Responsible Care NZ

Box 5557 Wellington 6145

Responsible Care NZ works with industry partners to implement the hazardous substances legislation.

WorkSafe (MBIE)

www.worksafe.govt.nz

Government agency formed to provide compliance and enforcement of hazardous substances. Responsible for hazardous substances certificates.

EPA

www.epa.govt.nz

The EPA administers the HSNO Act and supplies extensive information on working with hazardous substances.

Ministry for the Environment

www.mfe.govt.nz

The Ministry administers the HSNO Act, and provides policy, publications, technical reports and consultation documents.

HAZANZ

www.hazanz.org.nz

An association of the safety organisations in New Zealand.

Institution of Chemical Engineers

Since 1922 the multi-national IChemE has advanced chemical engineering's contribution for the benefit of society. Its offices include UK, Australia and New Zealand.

Local Government NZ

www.lgnz.co.nz/lg-sector/maps/

Local Authorities have responsibility for policing building controls. Some local authorities are contracted to Department of Labour to provide enforcement of the Hazardous Substances legislation.

President's message

For as long as we can remember we have had a great time flying, driving and powering around our planet with cost-easy plastic products and a cheap liquid or gas fuel that carries its own energy at minimal effort from the user.

Life continues in the easy way that modern humans have become used to, recommencing planetary travel and generally affordable foods, fuel, fun and furnishing, most of it as a direct result of a relatively cheap energy source to adjust the world to meet our needs.

But as often found in nature all the positives of this easy energy living can also have negatives or in scientific terms 'every force has an equal and opposite force' and in this case the overuse of carbon based fuels is unsettling our weather and upsetting its calm demure.

A recent COP28 conference gathered world leaders to investigate how we can keep global temperature rises below 1.5°C so that high energy violent storms don't dominate our future. We hope for a calm future that our efforts to balance the system will be successful.

In this Spring edition of our Flashpoint our NZIHSM team too continue in our goal of "protecting, people, communities and the environment" commenting in articles as follows:

(i) Balance in the Wonderful World of Oil
(ii) Alternative Fuels to help us balance our use of fossil fuels
(iii) Spam, Scam and AI – what can we trust in our world of global internet
(iv) EPA and delays
(v) A hazardous classification for fleas?
(vi) Uncle Archie's ramblings

Hopefully we will be able to solve the problems of our planet, before the planetary problems sort us out! Some of the articles in our *Flashpoint* address how to achieve this, and all of us will need to cooperate with each other and possibly forsake some of our short-term luxurious living in order to achieve a stable long term for our future generations

All of the articles are interesting reads and fortunately progress is being made when we all work together. Best wishes to you all for a very Happy Christmas and a wonderful Year ahead and Enjoy !!

John Hickey
Institute President

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Cover photo by Zbynek Burival.

Flashpoint

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Balance in the wonderful world of oil

As long as we can remember, we humans have been masters of our planet.

Most humans have a wonderful life, with a balance of leisure and an interesting blend of work and play. In the western world most of us can relax at night in our dwellings, constructed to keep us warm, dry and suitably secure, so that we can rest at peace unconcerned with the roaming competitors outside.

Even better, most of us can receive our heat and energy needs delivered down a wire, and when hungry, just wander into a super-shop where we can choose all of our weekly food, ready made, with just the wave of a plastic card.

For many of us it is a wonderful life indeed, almost an enviable experience with food, warmth, and relaxation all at the whim of a card, but how did we get to this wonderful position, and what is the secret to this magical card?

Perhaps it is the plastic in the card that can provide a clue?

This plastic is found in many human products from aircraft to cars to containers, and it is hard to imagine a world without plastic. But this is not a naturally occurring product it is a product that humans have developed from OIL.

Humans and oil, the numbers

Our Earth has been in existence 4.5 billion years and general consensus is that life started with plankton, and following from these our ancestors 'the upright ape' have been around these parts for some 2-2.3 million years.

But some believe that we 'rule the Earth' as a right of our 'ability to think', and following these 'thoughts' the homo-sapien species came out of Africa some 200,000 years ago in search of food and sustenance.
To brighten the food some 135,000 years ago, we found fire (and the ability to cook the dinner).

Based on recent 'carbon-dating', it is thought that we humans migrated from Africa spreading across the planet through to America some 70,000 years ago, Australia 50,000 years ago and recently resting in New Zealand only 1500 years ago.

We are the 'new crew', and we found that not only by using wood from trees, and in only, the last 300 years by digging up the ancient Coal or Oil from plankton or long-dead plants, we were really able to easily get the heat, fuel and plastics to really get the 'Energy-party' going

But these are 'big time 'numbers indeed and as such almost incomprehensible, so if we redefine our planet's history into a recognizable 24-hour basis, as shown in the attached table, our 'upright sapien species' have been around for around 4.3 seconds and our latest Oil based flare-up around one thousandth of 1 second (0.001 sec).

By using this buried oil treasure we have almost had an 'easy energy party' and using the fire and food, moved from hunter-gatherer to farming food with one farmer now able to feed thousands! From this easily available food, energy and products we have been able to grow our species, making time for education (and thinking), finding new and wonderful products/ways to keep the energy party going.

History of Energy on Earth

Item	Actual Years ago	Proportion of 24 hour basis (%)	Proportion of 24 hour basis (sec)
Existence of Planet Earth	4500000000	100.0000000	86400.0000
Homo-sapien existence	2300000	0.0051111	4.4160
Homo-sapien spread out from Africa	200000	0.0004444	0.3840
Humans find Fire and Wood	135000	0.0003000	0.2592
Humans arrive in Americas	70000	0.0001556	0.1344
Humans arrive in New Zealand	1500	0.0000033	0.0029
Humans find Coal, Oil & Gas	300	0.0000007	0.0006

(i) Elapsed time has been converted to a 1 day (24 hr) basis to show relative age

Using easy energy we were also able to create bronze, steel, concrete and electricity so that we could initially live together in villages, then using energy powered machines, and elevators, we built tall-tower cities for close communal living.

We then over the past 150 years found the wonders of Oil-based Plastics, Refrigeration and Transport to keep our food fresh for longer, and have Railed, Driven and Flown around our planet and even out towards the Stars beyond.

What a Celebration, with our 'control of chemistry' slowing the 'bugs', and the fun of new foods and plastics as we have worked out new ways to manage our planet to suit us.
Many of us have lived like the 'kings of old' by harnessing this food, gadgets and instant communication in such a way that our dreams can be instantly delivered across our planet down a simple metal wire or even satellite.

For Earth's last 0.06% of existence, these 'cheeky monkeys' have used Earth's buried treasures to deliver a wonderful time for themselves, at the flick of a switch, without a worry in the world!

However, some evidence of our recent celebration is shown in the variation in the rate of CO_2 in our earths' atmosphere over the last 800,000 years. For the first 790,000 years the CO_2 has gone up and down in a form of cycle, to cope with volcanoes erupting, meteors in a similar manner to many 'Balanced Processes" as they cope with outside impacts.

But if we look at the recent CO_2 concentration line, over the past 300 years this has risen straight –up almost asymptotically, outstripping the previous cycles as it rises towards an unknown future. This is interesting as it demonstrates that some-how our homo-sapien species is influencing our planet in ways that no earth-dominant species, even the longer dominant dinosaur species, has influenced this before.
We have even increased our human populations 100 times from 0.6 to 6 billion from 1700 to 2020, during our only latest 300 years of easy energy usage.

But recently, our Earth may be rebelling, with superheated storms and summers becoming norms, our birthplace Africa is in drought, even New Zealand and Aussie are having record temperatures and floods, and the tropical bugs are coming back!
Our use of Earth's buried energy has been a short but fantastic period but as is typical with nature do we not need to balance all of the effects of this usage and WHO is doing the dishes?

So what's the fuss, we have always coped before, and why should we slow down our Party to placate an irate planet and why does a bit more carbon in the atmosphere matter??

Well, as is usually the case with a science based process, 'any action has an opposite reaction' as a system balances itself against the impacts from outside.

What is the impact of CO_2?
One result is the Greenhouse effect, where like the glass in a greenhouse, our local sun's shorter 'ultraviolet rays' can pass through the atmospheric CO_2 cloud to be absorbed in the earth but the resultant longer and heating 'infra red' rays given off as the planet absorbs the ultraviolet rays are trapped under the CO_2 cloud, further heating up the planet.
This additional heat provides more energy for storms, drying the water off marginal land masses while melting remaining icecaps to raise sea-levels and saltwater to low lying near-sea island areas.

What is this oil-generated process
The balanced carbon cycle
Earth life is a breathing mixture of carbon, air and water. In an ideal earth process its carbon –cycle is balanced, animals and plants live dependently with each other with animals living by breathing in oxygen and expelling CO_2 while the plant-life absorbs the 'carbon-dioxide' during their photosynthesis process and renewing the oxygen.
In theory a wonderful system, as is shown on the attached carbon cycle diagram where balance is achieved and the process lasts forever.
In recent times however, human's carbon cycle has somewhat modified earth's natural carbon cycle along with all of those wonderful things that our 'oil age" has delivered.

Earth from Apollo 17

The problem is that we have dug up and used these carbon treasures but not replaced them into the earth, rather dropping them in non-absorbent forms into the seas and the air. In addition, we have cut down many carbon-absorbing trees somewhat reducing the earth's ability to cope as is shown in the following attached 'man-modified carbon cycle diagram'.

In effect we have skewed the carbon-cycle and reduced its natural ability to cope, with one catastrophic possible outcome being the curtailing of life or the

Party as we know it. Our absorbing trees have become smaller and contributing fuel trees bigger with larger clouds between.

So what DO we DO?
To put it simply we need to again "Balance the Process" and to maintain the good time equilibrium earth needs 'To balance the carbon in to equal the carbon out'.
And to adopt our search and rescue terminology we too need to adopt an emergency SAR approach as outlined in The Carbon re-cycle diagram attached.

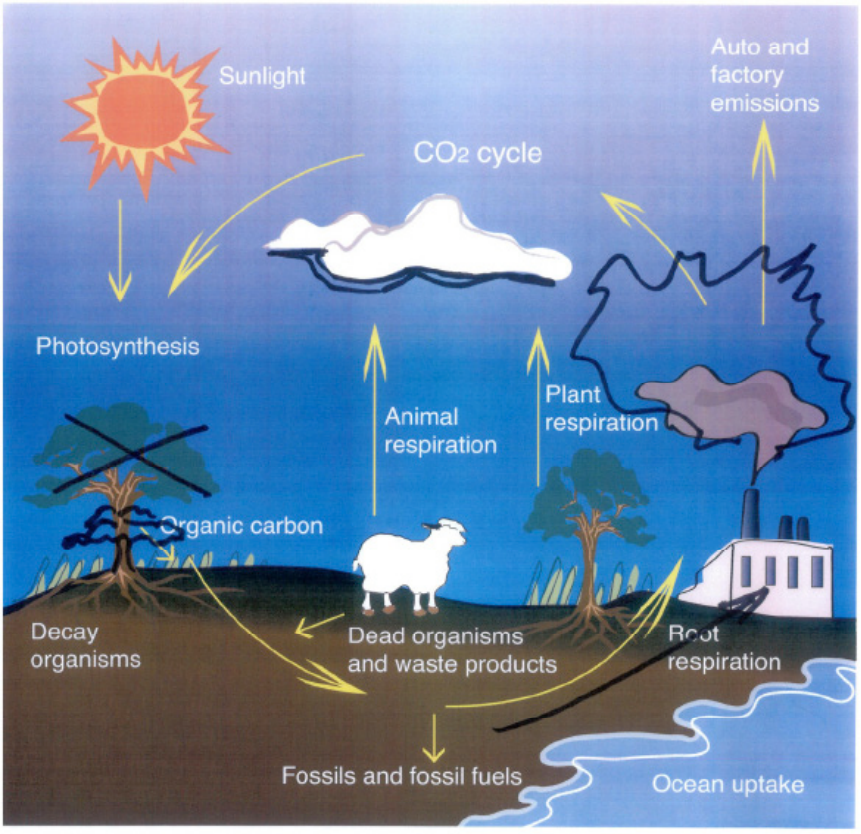
Sequester (search and sequester, bury or scrub) excess Carbon
Absorption (find and bind excess carbon with planting trees the simplest)
Recycle (recycle the treasures so we can re-use the benefits multiple times without further polluting the earth around)

None of this will fortunately be easy and we will need to abandon our 'throw-away' culture and find new ways to reuse or recycle the carbon riches that we have so recently obtained.

Can we keep in the stable pattern of the past 300 years?
If we don't balance Earth's systems, our planet party may be shortened and life as we know it may be much more turbulent and harder for humans than the recent 100 years. As Earth's recent administrator, humans need to engineer significant changes to balance and stabilise Earth's systems by renewing resources and reducing human manufactured changes.

Until we achieve this balance we will need to adapt to a far more turbulent planet than humans have recently been used to. As a 'thinking species' will all need to work together using Earth-balancing tools like sequestration, absorption and recycling of existing carbon by-products to balance our atmosphere and also use our neighbouring Sun's energy directly through solar, battery and other renewable technologies.

Hopefully we can use our human intelligence to understand and indeed balance our universe so that we can all live 'happily ever-after' so that we don't in a worst case scenario follow the demise of Earth's earlier 'dinosaur dominators' and other Earth-dominant life species before us.



HUMANS MODIFIED CARBON-CYCLE

Pollution pods 'in your face'

One or two minutes inside artist Michael Pinsky's Pollution Pods and visitors at COP25 might begin experiencing shortness of breath, but there's nothing dangerous in the air in the pods. Safe innovative perfume blends and fog machines imitate the air quality of some of the world's most polluted cities – London, Beijing, São Paulo, New Delhi – as well as one of the most pristine environments on earth, Tautra in Norway.

Outside the pods, however, air pollution has been declared a public health priority by WHO: largely caused by the same burning of fossil fuels that is driving climate change, polluted air is poisoning nine out of ten of us and killing over seven million of us prematurely every year. Children are especially vulnerable: 600,000 children die prematurely every year from air pollution related diseases.

Dr Tedros Adhanom Ghebreyesus, Director-General of WHO said ntions need to agree unequivocally on the need for a world free of air pollution. "We need all countries and cities to commit to meeting WHO air quality guidelines."

"The true cost of climate change is felt in our hospitals and in our lungs. The health burden of polluting energy sources is now so high, that moving to cleaner and more sustainable choices for energy supply, transport and food systems effectively pays for itself," said Dr Maria Neira, WHO Director of Public Health. "When health is taken into account, climate change mitigation is an opportunity, not a cost".

Alternative fuels:

Hope or hazardous thinking?

Ideas abound regarding the potential substitutes for fossil fuels. The following is review of the more common options and whether they have any place in a future world of energy production and utilisation.

Natural gas

Natural gas produces 50% less greenhouse gas when burned compared with coal. In addition, even though natural gas is not a renewable resource, there is an abundance of it. However, exploring for new sources to meet growing demand is not without controversy from environmentalists.

Hydroelectric power

These facilities are an attractive source of green power, but many countries lack suitable river ways on which to develop hydro stations; and the siting of new plants can require significant environmental compromises.

Wind

The problem with wind is its intermittent power generation and short-lived energy storage capacity. It is also unclear what impact massive numbers of wind farms might have on lower-level air currents and whether this itself could impact climate change. Wind turbines may find a role in some shipping applications to reduce fuel consumption; but could interfere with container handling on these ships.

Solar

The dilemma with solar power is that silicon-based photovoltaic cells are fairly efficient but also highly expensive, whereas thin-film cells are relatively inexpensive but inefficient. Some blend of these two technologies is needed to exploit silicon's efficiency and keep down costs.

Nuclear

Nuclear power generation has declined in recent years as plants have been shut down. The history of nuclear plant disasters has not encouraged its on-going development.

E-fuels

Electro-fuels, a class of synthetic fuels, are a type of drop-in replacement fuel for those which produce carbon dioxide in their manufacture. However E-fuels release carbon dioxide into the air when burned, somewhat negating their intent.

Biofuels

Biofuels may provide a supplement to gasoline and diesel, but to completely replace them with biofuels would require the giving over of vast hectares of land, otherwise used for food crops.

Electricity

Electricity has found a place as a fossil fuel replacement in the light passenger vehicle market, in short range light weight commercial vehicles, and in city commuter rail routes. The use of electricity is impractical for shipping and long haul aircraft because of the large size of batteries required. To fly the seven hours from JFK airport to Heathrow would require a payload of 250 tonnes of batteries!

Water cascades from New Zealand's Clyde hydro-electric dam.

Hydrogen

The appeal of hydrogen is that the only by-product of its combustion is water. However, to make hydrogen by water electrolysis is an inefficient use of the electricity that can be used directly in EVs and commuter trains; and Germany has abandoned long distance hydrogen trains, concluding that electric trains are a much more cost-effective option. As hydrogen has to be handled in specialty pipework and storage tanks at minus 256ºC, bus and truck operators would have to re-work all refuelling stations; and similarly for fuel handling systems at all airports and sea ports world-wide.

Because of hydrogen's low energy density (in MJ/L) aircraft would require specialty fuel tanks four times the volume required for jet fuel; reducing passenger seat numbers so increasing seat prices. Likewise, sea-going cargo vessels would require specialty tanks eight times the volume required for marine oil, reducing cargo payload space. Hydrogen would have to be available at all ports of call for ships; and at all airports globally.

Ammonia

Because of its relative ease of handling and storage at ambient conditions, ammonia – a hydrogen derivative - is seen by some as a potential hydrogen carrier. However the conventional grey ammonia production process generates carbon dioxide emissions; and ammonia if burnt directly

as a fuel produces nitrous oxide emissions. A green process would involve combining nitrogen from an air separation plant with hydrogen from a water electrolysis plant to make ammonia, then recovery of the hydrogen for use as a fuel at the end user's site; a very convoluted and expensive route.

In conclusion, electricity aside, none of the alternatives for replacing fossil fuels in the transport sectors have any realistic applications. Most sectors seem unlikely to be willing adopters of alternatives to the status quo because of the practicalities and adverse economics of making any change.

Heavy industries

Materials like steel and cement are critical in our daily lives. However their production requires vast quantities of energy, usually derived from fossil fuels with serious levels of emissions.

These sectors need to dramatically reduce its emissions, however heavy industry faces some unique challenges:

- Industrial plants tend to have long lifetimes, typically, 30-40 years. Retiring them early to switch to alternative technologies would incur very large costs.
- Heavy industry requires high temperature heat, in chemical reactions from which emissions are inherent to today's production processes. Carbon capture and hydrogen technologies offer means to provide high-temperature heat while eliminating most emissions, but these technologies are still at early stages of development.
- Many industrial products are traded in highly-competitive global markets. This makes it challenging for any one producer to turn to the currently more expensive low-carbon production pathways in order to reduce emissions without being undercut on price.

Bringing technologies like carbon capture and hydrogen, currently at demonstration and prototype stages, through to usability at market scale quickly is critical if the heavy industry sectors are to make their contribution to reaching a net-zero emissions energy system.

Large emissions reductions in heavy industry will require a multi-faceted policy response and government support. An example of this response is at New Zealand Steel where a new furnace will replace coal and iron sands with electricity and scrap steel.

– Dave Lascelles

Oil and gas no longer a sunset industry in New Zealand *- Getty.*

Laser-produced fertiliser

The current process producing ammonia-based nitrogen fertiliser isn't cheap or environmentally friendly, accounting for 1-2% of global energy consumption and CO2 emissions.

However, Germany's Helmholtz Institute for Renewable Energy claim to have pioneered a new ammonia production process that could provide an alternative to the Haber-Bosch process, using off-the-shelf lasers to break the chemical bonds, a process needed for ammonia production. It says this could be used with renewable energy to produce sustainable fertiliser, offering hope for an alternative to traditional methods at a time when traditionally produced fertiliser is both unsustainable and expensive.

Sheep grazing under solar panels on a New Zealand farm.

Spam, scam and AI:

Where is the trust?

People, or the 'upright ape", have been the dominant force on our planet for as long as most of us can remember! This is a wonderful thing although it indicates that we all have very short memories given the age and history of our planet. But is this also a weakness of our species?

In the interests of 'hazardous substances' we decided to expand our scope and investigate another of those hazardous items that affect our society namely Scam. To consider this weakness we must also consider our strength, which has allowed a relatively small monkey, when compared to the tigers of the earthly system, to dominate our surroundings while benefitting from all of the joys that our planet Earth has to offer.

Our ability to communicate with each other through languages and from there to trust one another has allowed for many of us to work together, and working as a group overcome any of the problems that often stronger individual, non-human, competitors have been able to throw in our way!

Over only the past 30 years this trust or ability to work together has allowed us to create machines and workgroups to create food for all, group housing and mechanical transport and more.

These amazing developments have allowed us to now live together in vast tribes of humans, where we only need to walk into a central shop and wave a small card and all the riches and food that we need can come tumbling off the shelves into a basket that we wheel around the collection shop.

What is perhaps even more wonderful is that in recent years we now don't even need to go to a supermarket, but our recent development of electronic communication now allows us to not even rise up off the couch, but to lie down and press a few buttons on a screen before us and all of our food and other necessities, bar perhaps fitness, for our living can be delivered directly to us!

But as always in any balanced process, it is perhaps this remarkable strength that is also in danger of becoming our greatest weakness!

Our strength to trust in our fellow humans, and communicate with each other has over recent years risen from the family to the village to the city to the country and now to planetary communication following the development of the telephone into the planetary communication system that we now know as the 'Internet'

This communication system has allowed us to source goods and services from around the planet through our new ability to trust our new communication and using money to trade with other parties that we often trust even though we haven't met them, 'What a strength for humanity'!

However, it is in this strength, unfortunately, that also lies our weakness in that whoever controls our communication, or the internet, can also control our information and through this our group behaviour. Since the infancy of our internet, we have encouraged the freedom of press and information and have achieved partial success through our human concept of 'democracy' which has allowed individual humans to think of great and new development, as no one individual human should consider themselves the master of all information, which has lead to even greater group progress – but that is another story.

However, it is also through this freedom of communication that a small group of humans have been allowed to try and control parts of our information with 'false information' to benefit themselves, by asking us to trust them at the risk of trust for all, and such is the dichotomy of our free information system.

As is the case throughout all our human history where we have trusted one another leading to great advantages and development for us all, we cannot allow small groups of spammers and scammers to interrupt our free human communication system even though these individuals can achieve some spectacular stunts before we find and close these stunts down.

Mind you, some of the stunts that scammers have shared through the internet and emails are quite sophisticated, and if we consider these we can see how though exploiting our greatest human strengths of love and trust, they can actually rob us of youthful enthusiasm for our wonderful global communication systems where all of the people of our world can freely chat together.

Still, rather than completely shutdown the freedom of our communication or appoint some global information emperor who can decide all that we need to know, perhaps to be fore-warned

is to be fore-armed and we should reveal some of these scams for the untrustworthy items that they are.

Examples of spam, scam and AI

The Banking Scam

In order to live humans need food and housing, and early humans realised that individuals had strengths in certain areas but by working together, each of us didn't need to learn to build our own house and grow our own food, but we could specialise and trade goods with one another, initially through a barter system then later though a 'trust system' where a 'written note called money' could have value and be exchanged for goods and services.

So perhaps not surprisingly scammers like to target these 'money trust notes' so if successful they can have ill-gotten gains of goods and services for their own individual benefit at the expense of the trusting individual who may become poorer as a result. The global banking community also need to trust each other, for the system to work, and are strongly working towards closing these scams but some are very crafty as follows:

Banking link scam

Over the past 20 years the email, based on an individual email address, has allowed us to communicate globally with each other and as it is nice to regularly hear from Aunt Matilda somewhere in Europe. In this scam an email appears which has copied all of the banking symbols and communication letters from your actual bank with a message to urgently contact them through a 'time-saving' link to the banking website where you can access this through putting in your bank password and quickly gain a good banking result.

Unfortunately this friendly 'banking link' is not what it seems and can lead the unsuspecting bank customer into another site, also set up to resemble the bank's actual site, where they can collect the unsuspecting customers password for the scammers' own selfish uses at a later stage.

In recent times New Zealand banks now advise their customers to NEVER FOLLOW LINKS, but if they need to communicate, to log-on to the legitimate banking site directly. In the case where a bank customer may feel 'tricked' they should also inform their bank immediately.

Banking Text message scam

In recent years many humans now have cell-phones for rapid and unthinking communications with family, friends and business.
Early one afternoon an unsuspecting customer received a text message on his cellphone, using his bank insignia asking him to click on a link and sign on to his bank's website so that they could communicate some important information through to him. Unthinkingly and in response to his trusted bank's request, he quickly entered his details.

On realising half-way through the process that this could be a scam, he immediately stopped and telephoned his bank to communicate this suspicious activity to them. The bank also had 'double identification verification' by sending a text to a cellphone asking the customer to independently verify any unusual transaction by replying to a bank text.

In the meantime, as soon as the scamming offshore crowd had the unsuspecting customer's cellphone sign on, quickly gained a cheap cellphone and programmed it to resemble the bank client's cellphone. Then operating from a trusted offshore market within three hours and multiple transactions, routed over $90,000 from the customers account through the offshore bank account under the name 'Blessing blessing' and then off to a further unknown bank account.

Fortunately while there was some loss, the bank was able through trust and its international banking contacts to regain much of the funds.

The chemical scam

There are a number of emails received these days from international suppliers offering to supply chemicals at a fraction of the cost of what one can purchase these for in the home market. Unfortunately, these also work on a trust between an unknown supplier and the customer on a variety of fronts such as chemical actually arriving, the arrival being actually what was asked for and the method of manufacture.

This unknown trust can be particularly unwise in the case of chemicals which are to be used for human clients.

The transport scam

In New Zealand in order to pay for the upkeep of our roading infrastructure, one of the methods of collecting the funds for this is through the issuing of an annual licence for each car which in recent times follows the receipt of an email requesting payment and a link directing the car-owner to the Waka Kotahi site for credit-card payment

Of course, scammers have copied this email to exactly match the original and, of course. directed the link to their own identical website for the input of the unsuspecting car owners credit card details.

Initially these scams were easier to spot by looking at the originating email address, which was usually some unknown overseas address. However, the recent advances have realised this and substituted the offshore address with a New Zealand address. Whoever supplied them with the "Dozyigit" address, at least had some sense of humour.

The tax 'refund' scam
The collection of revenues to allow a government to fund all of its services for the people it governs is a very important institution known to almost everyone. So what better persona for scammers to use than the IRD which we must all love and trust at the risk of rather large fines when we don't.

In the IRD scam the thieves have exactly copied the email providing notice that you are due a refund. What wonderful news, and all you need to do is click on the link and enter in your bank account and password details and you will never have to worry about your money again, as this will disappear and you won't see it again!

One again the advice is to NEVER FOLLOW LINKS !

The democracy spam
While debatable in line with our on-going human survival strategy to trust each other and work together towards a great future for our planet and us all, it is advisable to have a system where every individual can stand and/or vote for leaders that we individuals can trust to lead us into a future beneficial for us all.

This is contrary to the 'one person, or small group leader' system which assumes that one person can always be wiser than the whole.

Such as system is democracy, one person one vote, which undoubtedly has lead to some unusual decisions over time or perhaps where most of us may have not chosen the best alternative at a time. This 'each person can vote system' relies on our trust that each vote does count and has even called former presidents to account when they have questioned the accuracy of the count. (whether this is a wise call is another issue)

However, for a variety of reasons western democracy has lead to much industry and scientific progress and in the words of one Winston Churchill was: "democracy is the worst form of government – except for all the others that have been tried".

The guilt complex scam
One of the more unique scams in recent times is the receipt of an email with your email address on it informing you that your computer has been hacked by an unknown intruder who noted that you have been following 'adult content' on your machine and unless you pay money into his wallet he is about to distribute this to all your friends and relatives.

Wow, unfortunately in this case the spammer must of picked one of 'life's saints', who in this case who wasn't worried, but suggested to be truly 'adult' that you never reply but, TRASH these 'spam emails' immediately

Bigger system, bigger mistakes
One of the issues that has surrounded our human history to date is that often the larger the system becomes, the larger the mistakes that can occur when things go wrong! In this case, the larger and more instant our communication and world travelling systems have become the quicker than mistakes can be multiplied.

These spams and scams are perhaps a lesson not to give to much power to any single system, especially Artificial Intelligence, which may not share the trust and concern for others that most humans exhibit. This very important 'trust', which has allowed us to, for the recent time at least, to all work together and as a species become masters of our environment !

Bayer loses fifth roundup case

Bayer has been ordered to pay nearly $3.5 million by a Philadelphia jury that found Roundup weedkiller caused a woman's cancer. It is the latest in a string of trial losses for the company as it tries to fend off thousands of similar lawsuits.
This is the fifth consecutive loss for Bayer, but it is much smaller than recent verdicts against the company that total $2 billion.
The German conglomerate has faced pressure from some investors to reach a speedy settlement of the litigation in order to avoid further hefty trial verdicts. Bayer has been hit with much larger verdicts in similar cases in recent months, including a $1.56b award in November for three plaintiffs.
The company has said those trials were marred by procedural errors and has vowed to appeal..

Growing frustration at EPA delays

Growing delays in getting EPA approval on crop chemicals are potentially disadvantaging New Zealand farmers and growers and narrowing their options as key markets start banning the use of older chemicals.

Delays of up to five times the time limits laid out under EPA statutes, are being reported, stalling the release of new treatments and the use of existing chemicals for new pests and diseases. Companies applying for new product approvals claim they are not receiving acknowledgment of the application for some time afterwards, in some cases years.

The statutory time frames placed on EPA approvals only come into effect on acknowledgment of the application, and time waivers can also be used by the agency to extend the approval window. Data indicates that for category C applications, products with an active ingredient new to New Zealand took 577 days to be approved in 2022/23 – more than five times longer than the statutory 100 days. Prior to 2016, 94% of applications for new actives were processed on time. Now these are pushed out with time waivers and delays in acknowledging receipt of the application.

High-priority applications needed to control biosecurity outbreaks are also slow in being approved. An average turnaround for urgent assessments of products already approved but needed to deal with an incursion are taking up to 190 days, rather than the required 10.

FAR's Dr Alison Stewart said delays with the EPA have been an issue for the past six years, with approval times putting growers behind the rest of the world in treatment options. "Some of these applications are for biological treatments and the EPA does not have the people with experience in assessing this type of product. The system is set up for chemicals. It's like a round peg in a square hole."

Portable GHG measuring

Portable accumulation chambers designed to measure methane emissions from cattle are the latest tool developed by AgResearch for the primary sector's fight to find ways to reduce its climate impact.

The chambers allow scientists to bring this new technology to the farm, enabling farmers to accurately measure their herd. For the beef industry, it could be extremely useful because it can measure beef cattle in an industry where the animals are almost always kept outside on pasture, said AgResearch's Dr Suzanne Rowe.

"It would take an hour – you bring them in, you measure them and put them back out again. It's really hitting the numbers. This will offer scale in a way that we have never had before."

Toddler exposure to be studied

New Zealand Food Safety will assess the levels of exposure of infants and toddlers to agri-chemicals and contaminants in food next year.

It will be the first study since 2016, with eight such studies carried out between 1974 and 2016, and differs in that it will focus on infants and toddlers. There is also a lack of contemporary national food and nutrient intake data for children and adults to inform food list reviews and dietary exposure assessments, the consultation document says.

The previous NZTDS study analysed 1056 food samples to determine the concentrations of 301 agricultural chemicals, six contaminant elements (aluminium, arsenic, cadmium, lead, mercury, and tin) and four nutrient elements (iodine, selenium, sodium, and zinc).

Next year's study will also for the first time include measuring the levels chemicals found in packaging materials (bisphenols and phthalates), mycotoxins (aflatoxin and deoxynivalenol), nitrates, thallium, and folic acid.

Continued monitoring of aluminium, arsenic, cadmium, lead, and inorganic mercury through the NZTDS is strongly warranted on the basis that potential adverse health impacts from excess exposure to these environmental contaminants present potential health risks that can be significant, and they are routinely identified as priority contaminants internationally, said NZFS.

Needed:

A hazardous classification for fleas

A new study has revealed that the humble water flea could play a pivotal role in removing persistent chemical pollutants from wastewater -- making it safe for re-use in factories, farms and homes.

Rapid urbanisation, population growth, unsustainable food production and climate change have put unprecedented pressure on water resources, culminating in a global water crisis. The sustainable management and reuse of water resources is paramount for ensuring social, economic, and environmental well-being.

Persistent chemical pollutants, originating from domestic and industrial processes, escape conventional wastewater treatment and prevent its safe reuse. When wastewater effluent is released into rivers, it eventually finds its way into reservoirs, irrigation systems, and aquifer recharges. These chemical pollutants then enter the human food chain and water supply, detrimentally impacting on the health of populations worldwide.

Harnessing strains

Researchers have discovered a method to harness strains of a very common species of water flea, to provide a scalable low-cost, low-carbon way of removing pharmaceuticals, pesticides, and industrial chemicals from wastewater. This approach avoids the toxic by-products typically associated with current technologies.

The water flea reportedly has a remarkable ability to remain dormant for centuries, which allows scientists to revive dormant populations that have endured and survived many and varying historical pollution pressures. Leveraging of this trait, researchers have sourced strains of water flea with diverse tolerances to chemical pollutants.

Retro-fitting fleas

The researchers have developed technology that allows them to retro-fit populations of water fleas into wastewater treatment plants. The selection of each strains of water fleas used is based on that strain's specific chemical tolerance. Their findings have demonstrated the efficient removal of diclofenac (a pharmaceutical), atrazine (a pesticide), arsenic (a heavy metal), and PFOS (a surfactant) by four carefully selected strains of water flea.

This understanding of water flea biology enables the pioneering of a nature-inspired tertiary wastewater treatment technology for the refinement of municipal wastewater effluent. The water fleas are introduced to refine effluent before its final release. Once in place, the technology largely maintains itself, attributed to the water flea's clonal reproduction capability.

This novel technology provides a potentially revolutionary process for sustainably removing persistent chemical pollutants from wastewater. By preventing these chemicals from being discharged, we can protect the environment and biodiversity of our natural waterways.

But here's an itch to scratch – what HSNO protocols should we wrap around these little critters?

- Dave Lascelles

Radio wave tech treats effluent

A growing number of Canterbury farmers say locally-developed radio wave technology cleans up effluent ponds. "We decided to do a trial on one of our effluent ponds and in six weeks you could see the crust breaking up and in 10 weeks it had pretty much cleared," said Pamu's Brendon Stent.

The first effluent pond in the two-pond system on one of the farms hadn't been working well, with a thick crust forming on the surface and solids that should have been settling to the bottom getting into the pipe that links it to the second pond and blocking it regularly. HydroBoost co-owner Michael Dennis supplied the farm with a 24V unit that sits inside a raft that floats on the pond, emitting low frequency radio waves.

He says these stimulate biological activity in the effluent and accelerate its breakdown. Before and after photos show a remarkable transformation. On day one the pond is covered in a thick, green crust. Sixty-three days later the crust has gone and in places bubbles rise to the surface, an indication, Dennis says, of the biological activity happening beneath.

Uncle Archie

Cyclone zone
Summer 2024 is almost with us but are we going to get the extremes of drought and rain like the north-east parts of New Zealand did last year. The north-east of New Zealand is experiencing warm sea currents which is great for a day at the beach but unfortunately the demise of cold currents has now allowed the tropical cyclones to progress south and land in NZ.

This increase in wind and rain-water is dissolving hills, removing roads and bridges and is a sign that our World is changing, maybe Tropo will become a norm?

The winds of politics
In 1993 under the Bolger National government New Zealanders voted to change their voting system from the traditional first past the post, top party rules method, to mixed member proportional representation where multiple parties must work together to achieve a 50% majority.

While humans have ruled our planet through co-operation it can still be a shock to some parties. This round we are back to a more free-market government with National, Act and NZF hoping that all will co-operate to keep NZ wonderful.

Lest we forget
It has just past 5 years since our previous Editor, Anthony Lealand, passed on from the trials of certification and surgery. We miss Anthony, his firework displays and enthusiasm, and hope that he is enjoying a well deserved Rest.

HS certifiers
Hazardous substance certifiers are all very busy with a reduction in certifier numbers mounting increased pressure on all certifiers trying to help the market demand. Still this 'user-pays' model has allowed industry and the public to annually obtain experienced chemical safety knowledge at minimal cost to the 'tax payer' and according to an EPA report has proved beneficial over its first 17 years.

Hazardous substance certifiers need you!
The 2014 EPA register held 204 names for Certifiers whereas the November 2023 Worksafe Register has 98 names in total with 37 Stationary Container certifiers and 48 Location certifiers for the whole of New Zealand.

This maybe why HS certifiers often report about being too busy as more industry requests arrive? Perhaps if you have some science experience then you too could boost the certifier ranks and help New Zealand's HS safety effort ?

Kerry at COP28 on reducing Global warming
US Secretary of State John Kerry stated in a recent talk at the World COP28 on the environment " The US are fully seized of the full measure of the global warming threat to the planet and all of our citizens" We need to keep the rise to <1.5° alive. "We all depend on each other. No one country can solve this problem but we all know what the problem is.

It is the burning of fossil fuel without abatement, without capturing, or not burning it and providing for alternatives.

But why worry about this Global warming issue? We want to protect the insight of future Archeologists
"There was once a species called human who lived on this planet!".

Oil refining plant closure
Unexpected effects from the closure of New Zealand's only Oil refining capability at Marsden Point is now occurring with increased costs for hydrocarbon fuel and side product gases such as CO_2.This change and removal of local cheap carbon-based fuel should lead us to look at other 'renewable' options and force us to more earth friendly systems!

Renewable energy storage
Sources of alternate renewable energy include the production of electricity through wind, waves, water or the sun. A major issue is how store the created energy for later use when the energy source may not be available.

The safe and cheap storage of energy, such as batteries, dams, etc will be an issue along with how to transport energy from its source to the users. Perhaps local solar power may be the most economic.
If you want to send your comment, you can send it to archie@NZIHSM.org.nz.

The ideas expressed in this column are not necessarily the views of the NZIHSM or Flashpoint and in some cases the NZIHSM frankly does not approve!

NZ Institute of Hazardous Substances Management (Inc)

MEMBERSHIP APPLICATION FORM

1. **Name**: ……..
   First Name Surname

2. **Employment:**
   Business/Employer's Name: …….

   Position and Contact Details:

   Position Held: ……..

   Qualifications: ……..

   Experience in HS:
   ……

   ……

   ……

3. **Preferred mailing address: ……**

   Telephone Contacts: (Bus)…….

   Residential: …….

   Mobile: …….

   Email: ……. Web: …….

4. I have previously been a member of the Institute: Yes…… No ……..
   If No, I am applying to be a

   Member: ☐ Associate member: ☐

5. Return to: PO Box 10-385, The Terrace, Wellington
   Email: office@nzihsm.org.nz

How did you find out about us? ……

……

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