

September 2016



# Briefing

## INEOS

### Introduction

Since INEOS acquired its first stakes in onshore oil and gas licenses in the central belt of Scotland in 2014, it has made clear its intention to become the biggest player in the UK fracking industry.<sup>1</sup> By December 2015 INEOS claimed to be ‘the UK’s leading shale gas company’ and ‘the biggest player in shale in terms of UK onshore oil and gas licenses’.<sup>2</sup>

While the chemicals company fights the Scottish Government’s moratorium north of the border,<sup>3</sup> it is focussing its efforts to extract shale gas on licenses in Northern England, and starting to import ethane from fracked gas in the US.<sup>4</sup>

This briefing presents the findings of our ongoing investigations into INEOS’ operations. It is intended to give activists an overview of the company, its activities, and what it owns or has interests in. It also raises questions about INEOS’ lobbying activities, and its environmental performance at some of its sites, particularly at Runcorn in England. As we find out more information, we will update this briefing. We feel that it is fully legitimate to be asking questions about the past environmental record of INEOS when it is seeking to become the biggest shale gas player in the UK.

## 1) Company structure and UK sites

INEOS is a huge multinational chemicals company, operating at 65 sites in 16 countries around the world, with sales of \$54 billion.<sup>5</sup> Its corporate structure is complex: at least a hundred INEOS-related firms and subsidiaries are registered at Companies House in the UK – with many, many more registered in the US, Europe and in tax havens like Jersey.<sup>6</sup> INEOS is a privately-owned company,<sup>7</sup> and isn't publicly listed on stock exchanges. Its founder and CEO is billionaire Jim Ratcliffe, who is understood to be its majority owner.<sup>8</sup>

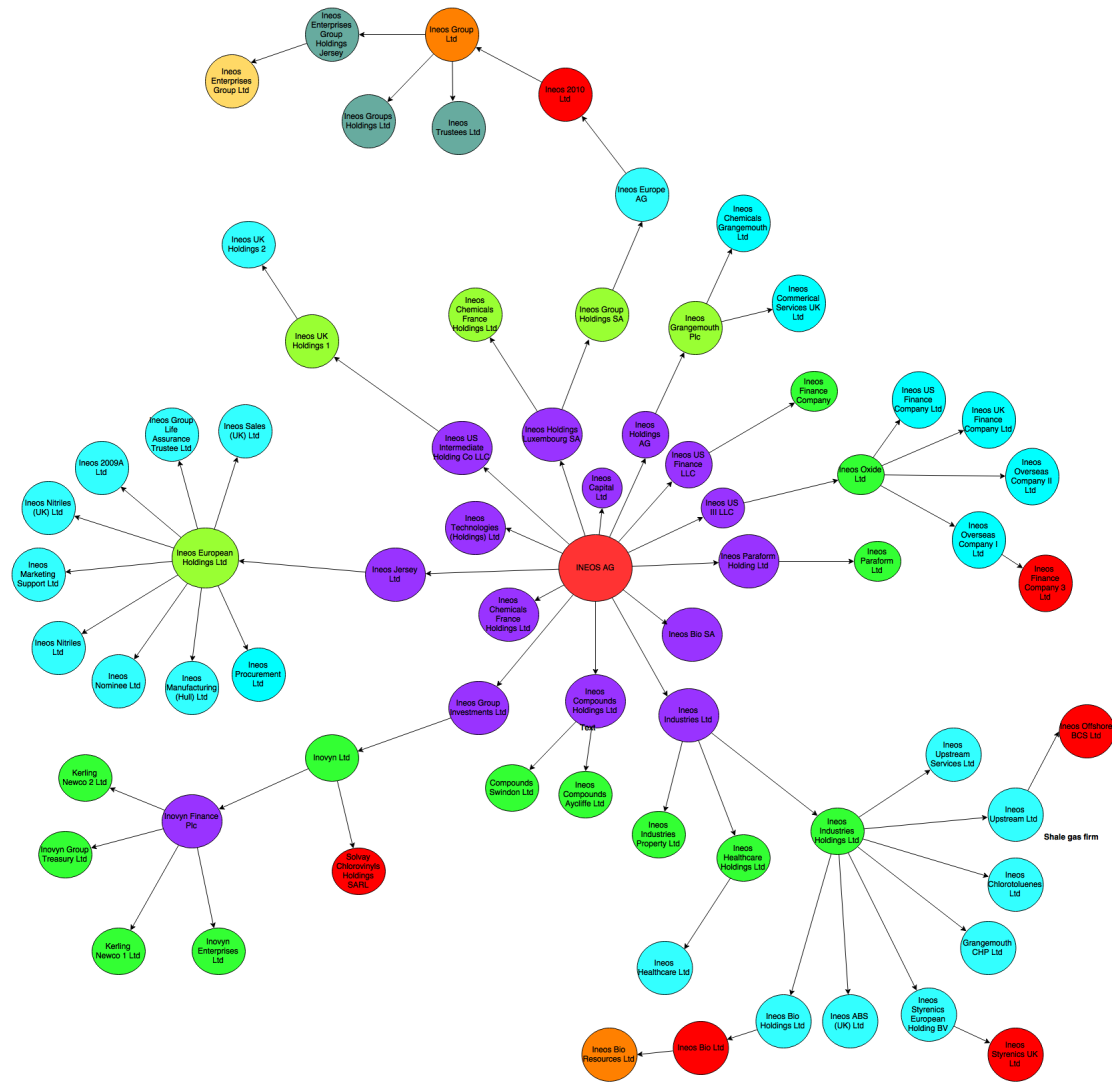
In the UK, INEOS operates at six main manufacturing sites:

- **Grangemouth** in Scotland, on the Firth of Forth – a huge petrochemicals refinery, home to INEOS Olefins & Polymers Europe.
- **Runcorn** in Cheshire, bordering the Mersey and the Manchester Ship Canal – home to INEOS subsidiary Inovyn ChlorVinyls, manufacturers of chlorine derivatives, chlor alkali and vinyls.
- **Northwich**, also in Cheshire, where INEOS extracts salt solution from vast underground salt caverns, for the manufacture of chlorine at Runcorn. Some of the salt caverns at Northwich were used by Runcorn's previous owners ICI Chemicals for waste disposal, and today the nearby Winsford salt mine still operates as a huge underground store for hazardous wastes.<sup>9</sup> INEOS have proposed using other salt caverns at Northwich for underground gas storage.<sup>10</sup>
- **Salt End** in Hull, home to INEOS Oxides.
- **Seal Sands** in Middlesbrough, home to INEOS Nitriles.
- **Newton Aycliffe** in County Durham, where INEOS manufacture PVC resins and compounds.

Though most of its UK firms are registered out of a small, pictureseque house in Lyndhurst near the New Forest, INEOS' UK Headquarters are in the chemicals works at Runcorn in Cheshire.

Since 2010, INEOS AG has been domiciled in Switzerland for tax purposes, but as of May 1<sup>st</sup> 2016 it has returned to the UK, following the Government's continuing cuts to corporation tax rates.<sup>11</sup>

An incomplete organogram attempting to show INEOS' sprawling corporate structure is shown below (Figure 1). Amidst the welter of firms, shell firms and subsidiaries, it's worth noting two in particular: INEOS AG, the ultimate parent company at the heart of this web; and INEOS Upstream – the company's recently-formed shale gas subsidiary.



**Figure 1: INEOS corporate structure.** Sources: Friends of the Earth diagram drawn by compiling records from Companies House and Duedil.

## 2) Land, landfill, shipping, pipelines and licences

Friends of the Earth has created an [online map showing INEOS' sites, fracking licences, and other features of relevance, here.](#)

INEOS owns the land for at least some, if not all, of its main manufacturing sites – for example, Inovyn Chlorvinyls own the freehold for its Runcorn site.<sup>12</sup> In addition, INEOS:

- are the owner-operators of a number of landfill sites near Runcorn;<sup>13</sup>
- have strong interests in shipping routes and ports, such as for bringing Natural Gas Liquids (NGL) such as ethane to their Grangemouth refineries, and potentially along the Manchester Ship Canal;<sup>14</sup>

- operate a number of major pipelines, including the ethylene pipeline network connecting Grangemouth to Seal Sands on the Tees, down to Salt End in Hull, and across to Runcorn;<sup>15</sup>
- own or have majority stake in all onshore oil and gas licenses in the central belt of Scotland, having acquired 80% equity in PEDL 162, and ownership of PEDL 133;<sup>16</sup>
- following a major deal with IGas in spring 2015 are part owners of 6 licenses currently operated by IGas, and operate a further 3 licenses in partnership with IGas,<sup>17</sup> 7 of which are in the Bowland Shale and two in the East Midlands. GDF Suez is also a partner in a number of these licenses;
- have acquired 21 Petroleum Exploration and Development Licences (PEDLs), under the 14<sup>th</sup> Onshore Licensing Round, awarded by the Government in 2015. The PEDLs are broken down into 38 blocks, covering over one million acres of land, and grouped in three main areas – 6 blocks in Cheshire, 17 in Nottinghamshire, and 15 in North Yorkshire;<sup>18</sup>
- is a recent entrant into North Sea gas having bought a number of fields previously owned by DEA Deutsche Erdoel AG, the German-based subsidiary of L1 Energy in December 2015.<sup>19</sup>

In July 2016, INEOS boasted they would be putting in thirty planning applications to frack in England by the end of the year.<sup>20</sup> However, by September, these plans appear to have been downgraded, with INEOS stating it hopes to lodge just five applications by the end of 2016.<sup>21</sup>

Currently, it's not known precisely where INEOS are planning to frack within their English licences. In September 2016, INEOS announced they wanted to in applications for 5 shale gas wells in the East Midlands.<sup>22</sup> Some further clues as to future locations may come from the spate of meetings INEOS have been holding with councillors and local residents over the spring and summer of 2016. In Cheshire, meetings have so far taken place in Frodsham and Mickle Trafford (near Runcorn) and in Knutsford, Lostock Gralam and Northwich (all near their Northwich site).<sup>23</sup> It's possible INEOS are scoping out fracking sites close to their existing chemicals plants, to provide a ready market for any shale gas produced. Each of these communities are also close to pipelines making up the national gas transmission network<sup>24</sup> – another possible outlet for fracked gas.

INEOS have also acquired significant shares in a number of other PEDL blocks previously owned and operated by IGas in Cheshire. It now has 50% stakes in four IGas licences to the west of Runcorn. Most significantly, it has also obtained 60% controlling stakes in PEDL145, PEDL193 and EXCL273 – three licences that cover the entire length of the Manchester Ship Canal.<sup>25</sup>

This association with the Manchester Ship Canal may not be entirely coincidental. The owners of the canal are Peel Holdings, another large, sprawling, privately-owned corporation with some striking similarities to INEOS. Peel own huge tracts of land and property in the North West of England, particularly in Liverpool, Salford – and along the length of the Ship

Canal. Besides property and regeneration, the company have also shown a very active interest in the UK's nascent shale gas industry – setting up a Peel Gas and Oil outfit,<sup>26</sup> and striking an agreement with fracking firm IGas to let them carry out test drills on Peel-owned land. A 2015 map published by Peel Group showing 150 of its investments in the North of England lists 5 'shale gas well pad' sites, at Port Wirrall, Ince Park, Woolston (Junction 21), Davyhulme, and Barton Moss.<sup>27</sup> Having now inherited majority stakes in the licences covering this area, it seems plausible that INEOS will look to re-open or situate new wells on land owned by Peel.

Since 2012 INEOS Olefins & Polymers Europe has struck a number of deals to secure imports of ethane from fracked US gas to its Scottish and Norwegian refineries, including 10-15 year contracts with Range Resources and CONSOL Energy to buy ethane, Sunoco Logistics for pipeline and terminal capacity, and Evergas to transport the gas across the Atlantic.<sup>28</sup>

In 2014 INEOS secured £230 million in UK Government loan guarantees to build a storage tank at its Grangemouth refinery to enable it to import ethane from the US, as part of a 'long-term survival plan' for the plant.<sup>29</sup> The company also benefitted from £9m regional selective assistance from the Scottish Government for this project.<sup>30</sup> The support was secured in the months following a dispute between management and the union Unite, which saw Ratcliffe threaten closure of the plant in October 2013.<sup>31</sup>

### 3) Lobbying

INEOS are not only massively wealthy; they also have considerable access to the corridors of power. As one DECC official wrote in 2013, referring to INEOS' CEO: "Mr Ratcliffe is very well connected and has had a number of meetings with Ministers in various Departments".<sup>32</sup>

The stats bear this out. Since 2013, according to Ministerial transparency data, INEOS have met with DECC Ministers nine times, BIS Ministers seven times, DCLG Ministers once, and once with former Chancellor George Osborne – as well as meeting (and dining) with various senior civil servants.<sup>33</sup> Here's a full list of known meetings:

- Energy Minister Andrea Leadsom had a call with INEOS in December 2015 'to discuss energy and climate change issues'.
- Business Secretary Sajid Javid met with INEOS on 4<sup>th</sup> November 2015, 'to discuss UK shale gas industry'.
- Energy Secretary Amber Rudd met INEOS on 2<sup>nd</sup> October 2015 'to discuss Energy and Climate Change issues'.
- Energy Secretary Amber Rudd met INEOS on 16<sup>th</sup> September 2015 'to discuss Energy and Climate Change issues'.
- Business Minister Lord Maude met with INEOS in September 2015, 'to discuss trade and investment opportunities'.

- James Wharton, Parliamentary Undersecretary at the Department of Communities and Local Government, met with INEOS in September 2015 'to discuss energy issues'.
- Energy Minister Andrea Leadsom met with INEOS Group Limited in September 2015 'to discuss Energy and Climate Change issues'.
- Energy & Business Minister Matt Hancock met INEOS in October 2014 'to discuss energy issues'.
- INEOS chief executive Jim Ratcliffe met DECC's Permanent Secretary Stephen Lovegrove on 30<sup>th</sup> June 2014.<sup>34</sup>
- Michael Fallon, in his role as Business Minister, met INEOS Group Ltd in January 2014 'to discuss energy'.
- Michael Fallon, in his role as Business Minister, met INEOS Group Ltd as part of wider roundtable in January 2014 'to discuss growth in chemistry'.
- Michael Fallon, in his role as Business Minister, met INEOS as part of a wider roundtable in November 2013 'to discuss chemical industries'.
- Michael Fallon, in his role as Energy Minister, had a call with INEOS in October 2013, 'to discuss energy and climate change issues'.
- Michael Fallon, in his role as Business Minister, met INEOS Oxide in September 2013 'to discuss chemical manufacturing'.
- Michael Fallon, in his role as Energy Minister, met INEOS in September 2013 for an 'Energy policy discussion'.
- Energy Secretary Ed Davey met Ineos ChlorVinyls as part of a roundtable with various businesses in June 2013 to 'discuss energy and climate change issues'.
- In May 2013, INEOS senior official Calum MacLean attended a dinner in Lancashire with DECC Permanent Secretary Stephen Lovegrove, Cabinet Secretary Jeremy Heywood, DECC's senior shale gas official Duarte Figuera, and fracking firm Caudrilla.<sup>35</sup>
- INEOS also met with Cabinet Secretary Jeremy Heywood in April 2013 for a 'general discussion on UK manufacturing'.<sup>36</sup>
- Energy Secretary Ed Davey met INEOS as part of a roundtable with various businesses in January 2013 'to discuss energy and climate change issues'.
- Chancellor George Osborne met INEOS in February 2013 'to discuss promoting UK growth and investment'.
- Business Secretary Vince Cable met INEOS in January 2013 as part of a wider roundtable 'to discuss green economy issues'.

In Scotland too, INEOS have real access to power, with owner Jim Ratcliffe and director Tom Crotty meeting First Minister Nicola Sturgeon on the same day that Energy Minister Fergus Ewing announced a moratorium on shale gas extraction in Scotland on 28 January 2015.<sup>37</sup>

We don't yet know what was specifically discussed at INEOS' meetings with Westminster departments. Friends of the Earth has submitted Freedom of Information requests for minutes of all of them, and responses are awaited.

But we can piece together a little of what INEOS may have been lobbying for from the occasional public pronouncements of their CEO, Jim Ratcliffe. He has frequently railed against what he claims are high energy costs in the UK. “The UK probably has the most expensive energy in the world”, he told the BBC in December 2013: “It’s not competitive at all on the energy front.”<sup>38</sup> Ratcliffe prefers the business environment in the US, which he says has “lots and lots of USPs [Unique Selling Points]”, including “cheap energy and cheap feedstock” – referring to America’s exploitation of shale gas.<sup>39</sup>

We know that Jim Ratcliffe made similar points to these in his meeting with former Chancellor George Osborne in 2013, in a presentation that the Telegraph reports “urged the Government to cut the rate of corporation tax for manufacturing companies to 12pc [and] reduce energy prices”.<sup>40</sup>

Ratcliffe is a critic of green taxes and regulations, telling the Telegraph in 2013: “The UK said it wanted to be the greenest country on the planet. That’s fine but you end up putting very high environmental taxes on users”.<sup>41</sup> Nor is Mr Ratcliffe a fan of renewables. “You can’t have an energy policy that means you can only have a bath when the wind blows”, he told the Observer in September 2015.<sup>42</sup>

INEOS have also engaged the PR firm Burson-Marsteller to lobby on their behalf.<sup>43</sup> On 1<sup>st</sup> July 2015, writing days after Lancashire County Council voted to reject fracking at two of Cuadrilla’s sites, Burson-Marsteller’s Public Affairs Manager Lee Wright penned a blog titled ‘A nation of NIMBYs?’, bemoaning “the latest examples of the national interest crashing on the rocks of localism” and wailing that “In the age of social media, well-funded and well-organised NGOs and campaign groups, it is all-to-easy for politicians to be cowed by those who shout the loudest.”<sup>44</sup> Or to put it another way: democratic protest can sometimes persuade elected representatives, not just well-funded lobbyists acting for the fossil fuel industry.

#### **4) Energy use**

INEOS’ business activities require two things in large quantities: chemical feedstocks, and energy.

Its petrochemicals refinery at Grangemouth uses a lot of energy: an INEOS presentation states that Grangemouth’s energy consumption is “roughly equivalent to [the] cities of Glasgow, Edinburgh & Aberdeen, plus Falkirk”.<sup>45</sup>

INEOS’ Runcorn plant in Cheshire “consumes as much energy as Liverpool”, according to Jim Ratcliffe.<sup>46</sup> The 810MW combined-cycle gas power station at Rocksavage, operated by Intergen next door to the Runcorn chemicals factory, is thought to have a contract with INEOS, providing some 300MW of power to the company, with the rest sold to the national grid.<sup>47</sup>

In short, whilst INEOS has based its arguments for needing shale gas partly on its potential to provide an ethane feedstock for chemicals manufacture, the company also has a clear interest in energy inputs and costs.

## 5) Leaks, waste and contaminated land

Chemicals manufacture can be a dangerous, messy and polluting business. Four of INEOS' main manufacturing bases – at Runcorn, Saltend, Seal Sands and Grangemouth – are on the Health & Safety Executive's list of top-tier sites under the Control of Major Accident Hazards (COMAH) regulations, which came into force in 1999. These rules apply to any organisation handling large quantities of industrial chemicals of a hazardous nature, and were drawn up in the wake of the 1976 Seveso disaster in Italy, which exposed thousands of people to the industrial carcinogen dioxin. Dioxins are by-products of various industrial processes; short-term exposure can lead to outbreaks of chloracne, a violent blistering of the skin, whilst long-term exposure is linked to impairment of the immune system, the developing nervous system, the endocrine system and reproductive functions.<sup>48</sup>

The following section focuses on the Runcorn chemicals complex. Before INEOS acquired it in 2001, Runcorn was owned by ICI Chemicals.<sup>49</sup> Public disquiet about potential pollution from the site was first fanned by an episode of Channel Four's Dispatches in 1995, *The Perfect Poison*, which warned that dioxin levels in farmed soils around Runcorn were vastly above the UK average. ICI disputed the programme's findings,<sup>50</sup> and the next year the newly-formed Environment Agency inspected Runcorn and gave it an essentially clean bill of health, despite admitting that "sediments in the Weston Canal show elevated dioxin levels due to site releases".<sup>51</sup>

An independent report commissioned by Friends of the Earth in 1998, however, found otherwise. Written by former pollution control officers of the National Rivers Authority (which had then been subsumed by the Environment Agency), the report found that "there were regular illegal releases of pollutants from the site", and that the "local Weston Canal has been used as ICI's drain" resulting in the canal being "stratified into two layers. The lower layer consists of brine contaminated with mercury... spills of solvents from the ICI site have resulted in chemical pollution levels twenty to sixty times the EU's Environmental Quality Standard." Runcorn was, Friends of the Earth concluded back in 1998, "possibly Britain's filthiest factory".<sup>52</sup>

A separate report by Greenpeace in 1997 warned of the dioxins being created by ICI's manufacture of PVC at Runcorn. "Most of the dioxins generated at Runcorn are contained in the organochlorine waste which is buried in salt caverns at Holford, in Cheshire", they wrote. "Most of the rest are in effluent discharged into Weston Marsh Lagoons. ICI admit that some of these dioxins escape from the lagoons into the Weston canal."<sup>53</sup>

Then, in 2000, it was discovered that hexachlorobutadiene (HCBd) poured into the Weston North Quarry by ICI in the 1950s and 60s was leaking into the foundations of houses in Weston village neighbouring the Runcorn site.<sup>54</sup> The US Environmental Protection Agency classifies HCBd as a possible human carcinogen affecting the kidneys, based on laboratory animal studies.<sup>55</sup> More than 50 people were evacuated from their homes in Weston as tests



proceeded, as 19 out of 104 properties were shown to test positive for HCBD.<sup>56</sup> For a while, Weston village became a “ghost town” with house prices plummeting and properties abandoned, with residents only returning gradually after ICI deemed the area was safe for human health.<sup>57</sup> In order to compensate homeowners, ICI bought up 200 homes in Weston village, and had to demolish an astonishing 37 of the houses built next to their dump – as they were no longer considered safe to live in.<sup>58</sup>

In January 2001, ICI sold their Runcorn site to INEOS.<sup>59</sup> INEOS can't be blamed for the actions of their predecessor, but what have they done to clean up Runcorn since taking it on?

### **a) Water pollution**

INEOS' activities at Runcorn by their nature continue to generate quantities of permitted pollutants, some of which are discharged into waterways. The Environment Agency's Pollution Inventory, for example, records that in 2014 INEOS ChlorVinyls at Runcorn released 16.5kg of mercury, 21.7kg of lead, and 134.1kg of chloroform into 'controlled waters' (the Weston Canal and Ship Canal), amongst many other chemical wastes.<sup>60</sup> These emissions levels are not illegal, and are governed by the EA's permitting regime.<sup>61</sup>

But illegal pollution incidents have also continued. In June 2015, INEOS was fined £166,000 for spilling 3.8 tonnes of caustic soda into the Manchester Ship Canal.<sup>62</sup>

It's unclear whether the overall ecological health of the Weston Canal, Manchester Ship Canal and Weaver Navigation has improved or remained the same over the past fifteen years. Halton Borough Council's 2003 contaminated land strategy expressed concerns that “the Manchester Ship Canal is of very poor water quality as it receives discharges from industry”, recounting that:

*“Ineos, Runcorn (formerly ICI) has a number of discharges into the Weston Canal, which then drains into the Manchester Ship Canal at Sutton Weir. Mercury cathode cells are used in the production of chlorine and the waste brine becomes contaminated with mercury, prior to discharge into Weston Canal. Discharges are now much reduced, but mercury has accumulated in older sediments.”<sup>63</sup>*

Monitoring data collected by the Environment Agency in 2015 has earned the Weston Canal and adjoining Weaver Navigation a 'fail' mark under the Water Framework Directive reporting system, because of the levels of chloroform (trichloromethane) present in the watercourse. The EA state that the source is “unknown” and that further details are “pending investigation”.<sup>64</sup>

If the canals continue to be polluted, it will be important to also monitor what pollutants are present in the silt dredgings deposited by the Manchester Ship Canal Company at the Frodsham Marsh Lagoons, not far from Runcorn.<sup>65</sup>

Wastewater from fracking poses fresh problems for disposal. Indeed, other companies further along the Manchester Ship Canal have been implicated in recent pollution incidents: before October 2011, for example, United Utilities at their Davyhulme water treatment plant at Trafford legally discharged some 2 million gallons of radioactive flowback water from one of Cuadrilla's test fracks in the Ship Canal. This was before the Environment Agency had adopted new regulations on flowback water, treating it as a radioactive waste and more tightly restricting its release.<sup>66</sup>

How, then, will INEOS dispose of radioactive flowback water from its proposed fracking sites? Investigative journalist Andy Rowell has uncovered that INEOS are considering dumping wastewaters from fracking at sea. In an email to a Ryedale resident in March 2016, the head of INEOS Upstream, Tom Pickering, stated that "We will capture and contain it [the wastewater], treat it back to the standards agreed ... with the Environment Agency and discharge where allowed under permit, most likely the sea".<sup>67</sup>

## **b) Air pollution**

In November 2001, residents in Runcorn were forced to stay indoors when a cloud of chlorine leaked from one of INEOS' plants and drifted over the town. Resident Mark Price described it as "a sudden overpowering stench of chlorine, much stronger than the smell in the swimming baths... I felt it fill my mouth and went straight back inside and shut the doors and windows. I was okay but someone with a chest condition could have been at risk." Cheshire Police instructed people to stay inside and the Weston Expressway was sealed off, leading to the Runcorn Bridge becoming gridlocked.<sup>68</sup>

In March 2014, hydrated lime leaked from the newly-built incinerator at Runcorn, harming 17 employees.<sup>69</sup> A second spillage of hydrated lime at Runcorn in October 2014 left six workers being taken to hospital and led to the local MP, Derek Twigg, calling for the incinerator to be shut down.<sup>70</sup>

One thing that has changed in the past 15 years has been INEOS' investment in a new incinerator at Runcorn to dispose of some of the plant's wastes – the Viridor Energy from Waste plant.<sup>71</sup> Whilst the incinerator has reportedly resulted in the diversion of some of Runcorn's wastes from landfill and lagoons, it has had some problems – such as the leaks of hydrated lime described above – and there is considerable public opposition to the incinerator, particularly due to fears about its impact on local health.<sup>72</sup>

## **c) Landfill and contaminated land**

INEOS, like ICI before them, send wastes to a number of local landfills: the Randle landfill site and Frodsham Marsh Lagoon are both operated under licence by INEOS subsidiary Inovyn ChlorVinyls Ltd. The Weston Marsh Lagoon landfill, right next to the Runcorn plant, was operated by ICI, but it's unclear whether INEOS still make use of it. Friends of the Earth has placed Freedom of Information requests with the Environment Agency for any monitoring done on these landfills.

What about the Weston Quarries that were leaking chemicals from ICI's old toxic waste dump, 16 years ago? Today, it's unclear who even owns the land. A search of Land Registry records and maps of land parcels draws a complete blank. Halton Borough Council have confirmed they don't own any of the land, and do not hold any records of the landowners.<sup>73</sup> A site visit by Friends of the Earth in August 2016 found no clear evidence of who now owned the area, though various pipeline markers labelled as belonging to INEOS appear to run through some of the fields nearby.

So what did ICI do to pass on their ownership of the Weston Quarries when the company folded? Was the land fully decontaminated? Did responsibility for the Weston Quarries pass to INEOS? We have found it all but impossible to find out for the reasons set out above.

## **Conclusion**

This briefing summarises the findings of an ongoing investigation into INEOS' operations. It raises questions about INEOS' record on air and water pollution, and its history of lobbying. We hope to obtain more information on these areas from the Freedom of Information requests we have placed with Government departments and regulators. We feel that it is fully legitimate to be asking questions about the past environmental record of INEOS when it is seeking to become the biggest shale gas player in the UK. We hope others will begin to ask these questions too.

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## Endnotes

- <sup>1</sup> INEOS press release, 'INEOS moves to become the biggest player in the UK shale gas industry', 20<sup>th</sup> November 2014, <http://www.ineos.com/businesses/ineos-shale/news/ineos-moves-to-become-biggest-player-in-the-uk-shale-gas-industry>
- <sup>1</sup> INEOS press release, 'INEOS moves to become the biggest player in the UK shale gas industry', 20<sup>th</sup> November 2014, <http://www.ineos.com/businesses/ineos-shale/news/ineos-moves-to-become-biggest-player-in-the-uk-shale-gas-industry>
- <sup>2</sup> INEOS press release, 'INEOS wins 21 new shale gas licenses in final part of UK Government's 14th Licensing Round', 17<sup>th</sup> December 2015, <http://www.ineos.com/businesses/ineos-shale/news/ineos-wins-21-new-shale-gas-licenses-in-final-part-of-uk-government-14th-licensing-round>
- <sup>3</sup> Scott Wright, 'INEOS chief makes fresh case for fracking in Scotland', 12<sup>th</sup> July 2016, [http://www.heraldscotland.com/news/14612478.Ineos\\_chief\\_makes\\_fresh\\_case\\_for\\_fracking\\_in\\_Scotland/](http://www.heraldscotland.com/news/14612478.Ineos_chief_makes_fresh_case_for_fracking_in_Scotland/)
- <sup>4</sup> BBC News, 'First shipment of fracked shale gas set to arrive in Scotland', 10<sup>th</sup> August 2016, <http://www.bbc.co.uk/news/uk-scotland-tayside-central-37033053>
- <sup>5</sup> INEOS website: <http://www.ineos.com/company>
- <sup>6</sup> Author search of Companies House and Duedil: INEOS AG was registered in Switzerland until 2016, and other subsidiaries in Jersey. An 'INEOS Ltd' based in the British Virgin Islands is mentioned in the Panama Papers: see <https://offshoreleaks.icij.org/nodes/10208850>.
- <sup>7</sup> INEO 'Inch' Magazine (in-house magazine), Issue 2, 2012, 'INEOS Capital: Interview with Jim Ratcliffe' <http://www.ineos.com/inch-magazine/articles/issue-2/ineos-capital>. Director Tom Crotty asks Jim Ratcliffe, "Do you see any change in the INEOS model – as a privately-owned group of businesses chemicals company?", to which Ratcliffe replies, "No."
- <sup>8</sup> Sylvia Pfeiffer, profile of Jim Ratcliffe, the Financial Times, 20<sup>th</sup> November 2014, <https://www.ft.com/content/9318986c-8ec2-11e3-b6f1-00144feab7de> (£)
- <sup>9</sup> Veolia brochure for Minosus underground hazardous waste storage facility [http://www.veolia.co.uk/sites/g/files/dvc636/f/assets/documents/2015/04/Minosus\\_Brochure\\_PDF.pdf](http://www.veolia.co.uk/sites/g/files/dvc636/f/assets/documents/2015/04/Minosus_Brochure_PDF.pdf) and John Vidal, The Guardian, 'Salt mine to become huge dump for toxic waste', 8<sup>th</sup> January 2004, <https://www.theguardian.com/science/2004/jan/08/sciencenews.greenpolitics>
- <sup>10</sup> INEOS Magazine, Issue 7, 2014, 'No Longer A Pipe Dream', <http://www.ineos.com/inch-magazine/articles/issue-7/no-longer-a-pipe-dream>. For the latest on the proposal's progress, see this page on the Planning Inspectorate's website: <https://infrastructure.planninginspectorate.gov.uk/projects/North%20West/Keuper-Gas-Storage-Project/>
- <sup>11</sup> Danny Fortson, The Sunday Times, 17<sup>th</sup> July 2016, 'Chemicals tycoon Ratcliffe heads home from Swiss tax exile'. See also INEOS website, 'INEOS confirms change of tax residence to Switzerland', 9<sup>th</sup> April 2010,

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<http://www.ineos.com/news/ineos-group/ineos-confirms-change-of-tax-residence-to-switzerland>

<sup>12</sup> Land Registry title deed for INEOS Runcorn site – copy held by author.

<sup>13</sup> Environment Agency landfill maps: <http://maps.environment-agency.gov.uk/wiyby/wiybyController?topic=waste&layerGroups=default&lang=e&ep=map&scale=1&x=357683&y=355134>

<sup>14</sup> For example, INEOS' 'Dragon Ships' bringing shale gas ethane from the US to the UK: <http://www.ineos.com/big-boats>

<sup>15</sup> UK Onshore Pipeline Operators' Association (UKOPA) slide deck on UK ethylene pipeline network, 2009, which includes maps: <http://www.ukopa.co.uk/pdfs/UKOPA-09-0016.pdf>

<sup>16</sup> INEOS press release, 'INEOS is today awarded three new shale gas exploration licenses from the UK government, cementing its position as one of the UK's leading shale gas businesses', 18<sup>th</sup> August 2015,

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