Re: Can hydrogen deliver?

Source: http://sci.tech−archive.net/Archive/sci.energy.hydrogen/2004−10/0948.html

---

From: Richard Bell (*rlbell_at_csclub.uwaterloo.ca*)
Date: 10/18/04

Date: Mon, 18 Oct 2004 17:51:05 +0000 (UTC)

In article <a8qdnfajlP2pl−7cRVn−1w@gwi.net>,
Tim O'Flaherty <pinwheels_Fudge_@gwi.net> wrote:
>
>"Eric Gisin" <ericgisin@graffiti.net> wrote in message
>news:ckuudb01kl1@enews1.newsguy.com...
>> "Tim O'Flaherty" <pinwheels_Fudge_@gwi.net> wrote in message
>> news:lrKdncRFWsN−UO_cRVn−tw@gwi.net...
>> >
>> > > Clueless. You cannot make weapons from nuclear waste.
>> >
>> > Tell North Korea,
>> >
>> >
>http://quickstart.clari.net/qs_se/webnews/wed/bc/Qnkorea−nuclear−rods−use.RE
>> > _T_DO2.html
>> >
>> > [SEOUL, Oct 2 (AFP) − North Korea indicated Thursday that it may have
>> > already begun using weapons−grade plutonium from spent fuel rods to
>produce
>> > more nuclear bombs.]
>> >
>> Then the reactor is not used for power production.
>>
>> They keep the rods in for weeks instead of years, producing Pu239 from
>U238,
>> with very little hi−level waste.
>>
>
>So are you saying it is impossible to make weapons from civilian nuke waste?
>How about from Pu reprocessed from civilian nuke waste? "You can't get
>there from here" However if you first go there.....

We are not saying that it is impossible. Merely that it is a stupid way
to do it. The plutonium in civil nuke waste is mixed with highly radioactive
fission products and the isotopic ratio of Pu240 to Pu239 means that the
plutonium recovered from civil nuke waste is not weapons grade. When you
use a neutron flux to turn U238 to Pu239, there are few fissions happening in
your uranium slug, so it is less radioactive and much easier to handle. A

reactor designed for isotope production makes it easier to pull out the uranium slugs at the optimum compromise of Pu239, little Pu240, and few fission products.

Compared to the irradiating of non−fuel uranium slugs, extracting Pu from spent fuel is a waste of resources.

Plutonium from spent fuel, Pu240 contamination and all, can be made into a weapon of sufficiently tweaked design, but the only way that you can be certain that it will detonate with a bang, not a whimper, is to actually embark on a test program.

So if North Korea has built weapons from material scavenged from spent fuel, but not tested any of them (Have I missed the news that North Korea has conducted a series of bomb tests?), there are serious questions that they are more than paper tigers (albeit, highly radioactive ones).

>
>http://www.wise−paris.org/index.html?/english/ournewsletter/19/page2.html&/e
>nglish/frame/menu.html&/english/frame/band.html
> [The reprocessing of irradiated fuels at La Hague makes France the world'
>s largest producer of "civilian" plutonium]
>
>Even if it all made it into Mox which seems unlikely since we still have all
>the military Pu to get rid of, it still isn't necessarily safe from
>proliferation .....
>
>http://www.wise−paris.org/index.html?/english/ournewsletter/19/page2.html&/e
>nglish/frame/menu.html&/english/frame/band.html
>
>[Having obtained a MOX fuel assembly by diversion or theft, a sophisticated
>terrorist group would have little difficulty in making a crude nuclear
>explosive. The necessary steps of separating the plutonium, converting it
>into PuO2, converting the oxide into plutonium metal, and assembling the
>metal or PuO2 together with conventional explosive are not technologically
>demanding and do not require materials from specialist suppliers. The
>information required to carry out these operations is freely available in
>the open literature.]
>
>
>[The procedures required for the chemical separation of plutonium from
>uranium in MOX fuel pellets would be simple and well within the
>technological capabilities of a moderately sophisticated terrorist
>organization (6). The preparation of Sarin for the attack on the Tokyo
>underground (7) involved considerably more sophisticated chemistry and
>greater acute danger to the operators than that required for the separation
>of plutonium from MOX. The chemistry is less sophisticated than that
>required for the illicit preparation of designer drugs.
>
>None of the concepts involved in understanding how to separate the plutonium
>are difficult; a second−year undergraduate would be able to devise a

>suitable procedure by reading standard reference works, consulting the open
>literature in scientific journals and by searching the World Wide Web.
>
>Sufficient plutonium to check and refine procedures can easily be extracted
>from mud collected from the Ravenglass estuary and contaminated by
>discharges from the Sellafield reprocessing plant (6) while depleted uranium
>can be purchased in several forms from most suppliers of laboratory
>chemicals. With small quantities of these test materials and a simple
>laboratory it would only take a chemistry graduate with some experience in
>actinide chemistry a relatively short time to refine the procedures outlined
>in this article. It would be easy to do this without arousing suspicion by
>using environmental chemistry as a front.]
>
>
>
>You responded to my post with: "Clueless. You cannot make weapons from
>nuclear waste." The discussion at that point was reprocessing which
>clearly CAN yield materials suitable for weapons. So with reprocessing we
>have reduced HLW volume but also increased capital costs and separated Pu
>with the greater security risks. Without reprocessing we have an ever
>growing number of Yucca Mt style repositories but the Pu will be protected
>by the presence of other fission products that preclude casual handling.
>
>Regards,
>Tim O
>
>
>
>